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Part 2 of this issue, "Report of the Teaching Institute on Physiology, Biochemistry and Pharmacology," will follow.

**JULY 1954 • Vol. 29, No. 7**

**Table of Contents on Page 2**



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# Table of Contents

Vol. 29

July 1954, Part I

No. 7

## ARTICLES

Human Genetics and Medical Education —C. Nash Herndon.....	13
Preprofessional and Professional Education in Medicine —Edward L. Turner.....	20
Medical School Enrollments from 1945 to 1955 —John M. Stalnaker, Ross A. Dykman.....	25
A Comparative Study of Student Performance in Medical Schools Using National Board Examinations —John P. Hubbard, John T. Cowles.....	27
The Psychiatric Social Worker as an Aid to Group Process Teaching —Kenneth E. Appel, Margaret M. Heyman.....	38
<b>EDITORIALS AND COMMENTS</b>	
Progress in the Distribution of Physicians.....	45
What's in a Teacher?.....	46
Medical Schools and Base Hospital Units.....	47
Our Readers Write Do We Need to Recruit Candidates for Medicine? —S. I. Kornhauser.....	48
<b>NEWS DIGEST</b>	
College Briefs.....	50
<b>AUDIOVISUAL NEWS</b>	
BOOK REVIEWS.....	58
THE PERSONNEL EXCHANGE.....	65
<hr/>	
Association Officers, Staff, Committees.....	70
Index to Advertisers.....	4
Calendar of Meetings.....	10
10	

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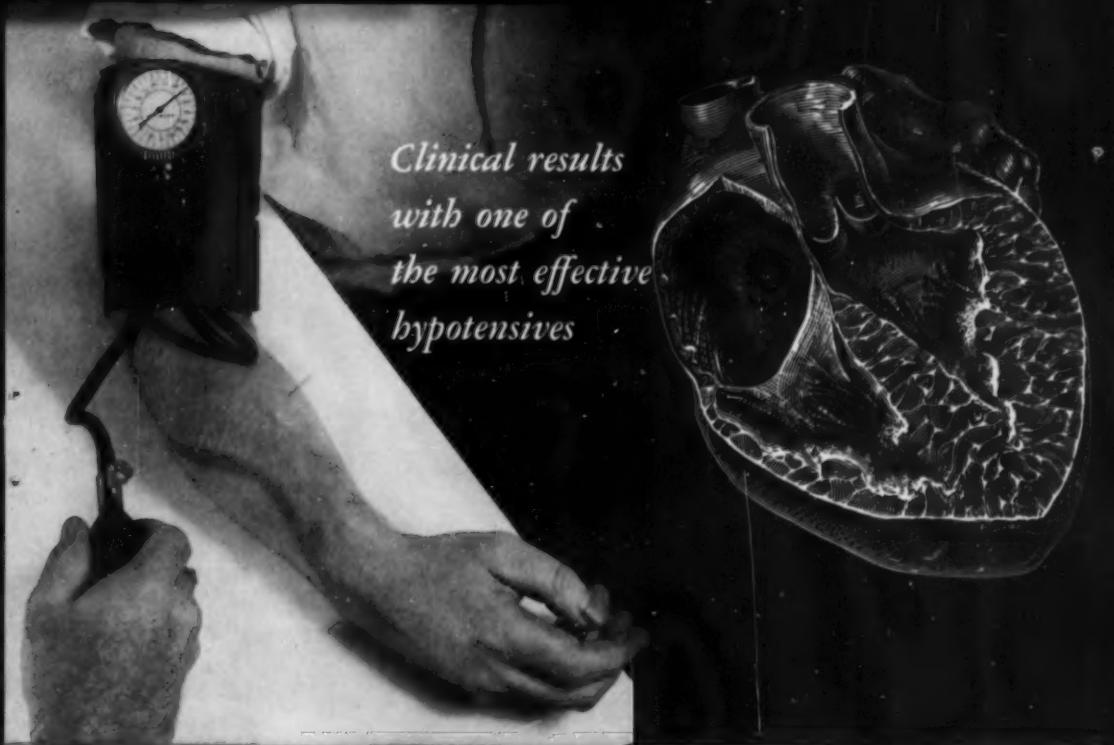
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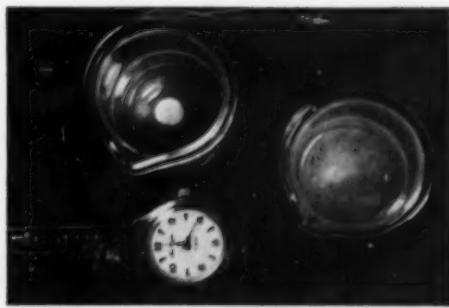
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Academy of Psychosomatic Medicine—Oct. 8-9; Plaza Hotel; New York City.

American Hospital Association—September 20-23; Palmer House; Chicago.

British Medical Association—July 1-9; Glasgow, Scotland.

Conference of International Union Against Tuberculosis—September 26-October 2; Madrid, Spain.

Congress of International Society of Medical Hydrology—September 26; Vichy and Paris, France.

Congress of International Society of Urologists—April, 1955; Athens, Greece.

Inter-American Congress of Radiology—April 24-29, 1955; Shoreham Hotel, Washington, D. C.

Inter-American Session, American College of Surgeons—January 11-14, 1955; Lima, Peru.

International Anesthesia Research Society—Oct. 10-14; Los Angeles.

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International Congress on Mental Health—August 14-21; Toronto, Ont., Canada.

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Pan American Congress of Pediatrics—August 1-7; Sao Paulo, Brazil.

World Congress of Cardiology—September 12-17; Washington, D. C., and Bethesda, Md.

World Medical Association—September 26-October 2; Rome.

## Index to Advertisers

Abbott Laboratories	6, 7	Charles Pfizer & Co.	Third Cover
Appleton-Century-Crofts, Inc.	3	W. B. Saunders Company	Front Cover, 1
Borcherdt Malt Extract Company	68	Smith, Kline and French Laboratories	60, 61
J. B. Lippincott Company	Fourth Cover	Taylor Instrument Company	11
Macmillan Co.	12	Warner-Chilcott Laboratories	5
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## **Human Genetics and Medical Education**

**C. NASH HERNDON**

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IN CONNECTION WITH its sixth annual meeting, the American Society of Human Genetics sponsored a symposium on Human Genetics and Medical Education in Boston on December 28, 1953. Speakers on the symposium, which was organized by Dr. Madge T. Macklin, included Drs. Louis K. Diamond, Harold F. Falls, F. Clarke Fraser, C. Nash Herndon, James V. Neel and Lawrence H. Snyder. The teaching of genetics was considered both in relation to the medical curriculum and in the training of house officers and in postgraduate courses of medical instruction. The paper by Dr. Herndon, published on the following pages, dealing with the current efforts of medical schools to provide instruction in human genetics, was thought to be of especial interest to readers of *The Journal of MEDICAL EDUCATION*.

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**G**ENETICS, being contemporary with radiology, must be considered a relatively young science when compared with most basic medical sciences. Unlike radiology, however, a number of years passed after the rediscovery of Mendel's principles in 1900 before genetics was seriously applied to medical problems. The many practical applications of genetic knowledge that can be useful in medical practice have been discussed by several writers and need not be repeated here. Our immediate purpose is to examine the status that genetics has acquired in the medical curriculum and attempt to evaluate its logi-

cal place in undergraduate medical education.

For generations outstanding teachers of medicine have emphasized the hereditary nature of certain afflictions, but the teaching of genetics as a science offering predictive information in a previously empiric field did not become established in medical curricula until the mid-1930's. Macklin in 1932,<sup>1</sup> Snyder in 1933,<sup>2</sup> and Allan in 1936,<sup>3</sup> were pioneer teachers in this field, and Snyder in 1951,<sup>4</sup> has reviewed progress in human genetics as a scientific discipline, pointing out the rapid progress made during the last two decades.

In 1946 Robertson and Haley<sup>5</sup> obtained information concerning the extent of teaching of genetics in schools

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## *Human Genetics and Medical Education*

of medicine by means of a questionnaire sent to the deans of all medical schools in the United States and Canada. Of 84 questionnaires sent, 60 were returned. A formal course in medical genetics was offered at seven schools. In four schools this was given in the first year by an instructor in anatomy, while in three it was given in the clinical years in the department of medicine. The class hours assigned ranged from seven to 30, with the average being 15. In addition, 25 schools reported that some lectures on genetics were given as part of various courses. At 15 schools these lectures were given in the course in histology and embryology, at five in anatomy, at four in other preclinical courses and at three schools the lectures were in the clinical years. Only 18 questionnaires specified the number of hours assigned for genetic material in other courses, the range being from two to 13 hours, with an average of five hours.

In an effort to obtain a clearer picture of the current situation, a questionnaire requesting information concerning instruction in medical genetics was sent during the fall of 1953 to the 87 schools of medicine in the United States and Canada. Replies were received from 81 schools. The tabulation of replies is as follows:

### **Question:**

*Is any instruction in medical genetics given during the regular course for the M.D. degree?*

### **Replies:**

Yes	48	55.2%
No	33	37.9%
Elective	1	1.2%
No reply	5	5.7%
Total	87	

A number of colleges gave qualified answers, and this partition is probably not strictly accurate. Such replies as "only sporadically" or "only

as subject happens to arise in clinical departments" were all classed as "no." A reply was classified as "yes" only if it included information indicating some consistent attention to underlying principles. Even with these qualifications, it seems apparent that there has been a significant increase in the attention given to genetics in the medical curriculum since the study of Robertson and Haley in 1946.

### **Question:**

*How many class hours are devoted to genetics?*

### **Replies:**

2-5 hours	26
6-10 hours	13
11-15 hours	7
More than 20 hours	2
Total	48

The classification concerning number of class hours of instruction also may not be strictly accurate. In a number of replies the figure given was specified as an estimate only. On some questionnaires this question was not answered specifically, but information was appended stating, for example, that lectures on genetic principles were given in hematatology in connection with blood group instruction or that "several hours" were given to general principles in embryology or pediatrics. All replies of this sort were classed in the two-to-five-hour group, although in several replies the amount of material described would suggest a larger assignment of time.

### **Question:**

*Is genetics a separate course or is instruction integrated with other courses?*

### **Replies:**

Separate course	6
Integrated	42
Total	48

Courses were classified as separate only if listed as being a regularly scheduled course in medical genetics separate from all other courses. Six

universities listed such courses, with the range of assigned class hours varying from six hours to 24 hours, with an average of 13.5 class hours.

**Question:**

If instruction is integrated with other courses, in what departments or courses is it included?

**Replies:**

(42 colleges)	
Anatomy, Histology, Embryology	24
Pathology, Microbiology	7
Physiology, Biochemistry	4
Pediatrics	13
Medicine, Hematology	13
Preventive Medicine	7
Obstetrics - Gynecology	5
Psychiatry and Neurology	5
Total	78

It will be noted that among the 42 schools reporting integrated instruction, several reported that genetic material was included in more than one course, giving a total of 78 for the above table. The majority of schools reporting instruction in more than one department noted that part was given in a preclinical course and part in the clinical years, for example, three hours in embryology and two hours in pediatrics. We have very little information as to whether current practice really represents an active opinion on the question, but the instruction as given is about evenly divided between the preclinical and clinical years.

#### Additional Opinion

Additional comments were added to nearly half of the questionnaires, indicating considerable interest in the topic and a rather wide range of opinion. These comments do not lend themselves to analysis, but a few quotations may be of some interest. One dean commented, "Although the type of program we have here is better than nothing, it neither represents our own conception of the kind of teaching that is desirable nor does it

afford the student an opportunity to actually become familiar with the theory, techniques and applications that give genetics and human genetics integrity as independent disciplines. It seems almost unnecessary to add that the barrier to achieving our concepts is largely monetary and to a certain extent related to a lack of appropriate man power." From another college classified above as teaching no genetics, the comment was, "We are at this moment discussing the introduction of organized instruction in genetics into our curriculum." A Canadian school replied, "There is a curriculum revision in progress at the moment and time may be allotted to genetics." On the other hand, a large Western school reported, "According to the chairman of our curriculum committee, the subject has never been discussed by the committee with the view of possible inclusion in the curriculum." The common dilemma of the overcrowded medical curriculum and the lack of qualified teachers is pointed up by a reply stating, "No, I think it would be fine, but by whom and when?"

Although the question was not included in the questionnaire, four schools mentioned genetics as a subject required for medical school admission, suggesting the opinion that genetics should properly be taught at the premedical level. This is somewhat in conflict with the general trend to encourage a broader liberal arts foundation rather than more specialized scientific courses. Records kept by the writer on the number of entering students at the Bowman Gray School of Medicine who have had courses in genetics in undergraduate schools indicate a rise from about 15 percent in 1943 to more than 50 percent in recent years. If all medical students had received such train-

## *Human Genetics and Medical Education*

ing, more advanced material could be covered with less expenditure of time. It is of interest that at Ohio State University the class is divided into two sections on the basis of pre-medical genetic instruction, with elementary principles discussed with those with no previous training and more advanced material being given to those who have had general genetics.

From the information available, it would seem safe to conclude that responsible administrative officers in most medical schools on this continent feel that some knowledge of genetics is desirable in candidates for the M.D. degree. Although some administrators feel that all required genetic knowledge should be acquired in the pre-medical years, the majority seem to feel that the school of medicine has a responsibility to offer material designed to bridge the rather wide gap between laboratory genetics and medical practice. It thus seems appropriate to consider questions of possible course content and the relation of genetics to other material in the curriculum.

To illustrate certain points in this connection, the course in medical genetics offered at the Bowman Gray School of Medicine will be described, not because we feel that this course is in any way a model, but because we have been forced to meet certain problems that may be of interest to others. This course was begun in 1942 under the direction of Dr. William Allan, with certain suggestions as to lecture content being contributed by Dr. Paul David and with the enthusiastic support of Dean C. C. Carpenter. It was first thought that medical genetics should be a clinical subject, and 20 lecture-clinic hours were therefore assigned in the senior year. The department of medical genetics

was administratively attached to the department of internal medicine.

The original teaching called for brief introductory lectures concerning cytologic background material, followed by clinical presentation of hereditary diseases by systems with description of single gene mechanisms and other genetic principles explained in detail when they arose in connection with specific disease entities. Although this plan looked excellent on paper, in practice it failed to produce the desired result. Although student interest was temporarily aroused by the presentation of clinical cases, it sank to a low ebb during discussion of basic principles. Students completing the course had distressingly vague ideas of genetic principles and their application.

After investigation, it was concluded that the poor result was due to three factors: (1) In the fourth year the student is primarily concerned with acquiring skills in diagnosis and treatment, and he finds it difficult to adjust his thinking to include the basic facts of a whole new branch of science. (2) Most important, the course material did not correlate well with other courses being given during the same quarter. (3) There was insufficient internal coherence with regard to basic genetic principles.

### **Revised Theories**

As soon as these facts were ascertained, our teaching theories were thoroughly revised. It seemed best to break the course into two parts, the first half to concentrate on a presentation of basic principles of genetics, using hereditary diseases only as illustrations of principles. The second half was designed as clinical instruction, covering the outstanding heredi-

tary diseases by systems and presupposing a knowledge of principles. To effect proper correlation with other course material, it seemed best to place the presentation of principles in the second year and the clinical material in the third year. Progressive rearrangements of the schedule were effected during the next three years until it seemed that the optimum position in relation to other courses was achieved.

Administratively, medical genetics was transferred from the department of internal medicine to the department of preventive medicine. These changes were facilitated by the fact that our entire curriculum was in process of revision with emphasis on interdepartmental correlation. The total effect of this curriculum revision has been described and evaluated by Carpenter.<sup>8</sup>

At present the course in basic principles consists of 12 lecture hours during the first quarter of the second year with pathology, physiology and microbiology being presented at the same time. The student is thus introduced to all types of causative agents of disease simultaneously, and studies their effects upon structure and function of the body. An effort is made to schedule lecture material in all courses given during the quarter so that related material will tie the various courses together. For example, the student may spend the morning studying the pathology of a given condition in the laboratory and find that the same disease may be used that afternoon to illustrate recessive gene actions. We feel that correlation of genetics with other courses is quite important, and that students should be introduced simultaneously to genes, germs and other agents of disease.

Basic principles discussed include

a brief description of cytologic background material, mutation, single gene substitutions with typical dominant, recessive and sex-linked pedigrees, penetrance and expressivity of genes, special mechanisms (holandric, partial sex-linked and sex-influenced genes), multiple factors and linkage. Elementary principles of population genetics are discussed briefly, with emphasis on gene frequency and isolate problems. In addition, two hours on blood groups and medico-legal applications are given later in the second year as part of the course in clinical microscopy.

The second half of the course is called "Hereditary Diseases," and is given during the third year. The course of 12 hours is given twice a year, reaching one-half of the class with each series, these being the sections assigned to internal medicine and pediatrics at the time. The major hereditary diseases are covered by systems, with presentation of illustrative cases as they become available on the hospital wards. Mimeo-graphed outlines are distributed which attempt to summarize modes of inheritance and other genetic data. General topics covered include malformations, diseases of the eye, mental defect, neurologic diseases, metabolic diseases, blood dyscrasias, skeletal abnormalities, skin diseases and constitutional diseases. Attention is repeatedly directed to the applications of genetics to preventive medicine, emphasizing the utilization of family history knowledge in early diagnosis, limitation of disability and prognosis in many varied clinical situations. With regard to congenital malformations and the more severe diseases of infancy and childhood, emphasis is placed on proper advice to be given to parents concerning possible future children. The inter-

## *Human Genetics and Medical Education*

actions of hereditary and environmental factors are constantly stressed.

In addition to the two formal courses, the medical geneticist is frequently invited to attend clinics or case presentations initiated by other departments to discuss briefly any special genetic factors of significance. This cooperation and correlation of effort between departments is encouraged at all levels by the administration.

We feel that our present method of teaching has proved to be rather satisfactory in accomplishing its purpose. We have no intention of making medical geneticists of our students. Our aim is to make them aware of genetic factors in disease and to teach them to utilize the available information as a useful adjunct to proper clinical handling of patients.

### **Place for Genetics**

As is indicated by the questionnaire replies described above, there is no unanimity at present as to where genetic instruction really belongs in the medical curriculum. Several suggestions on this point have been advanced. One of the more interesting ideas was described briefly by Currier McEwen,<sup>7</sup> dean of the New York College of Medicine, at a meeting of the American Society of Human Genetics in 1952, and discussed in more detail by Sheehan and Harman.<sup>8</sup> A proposal is made to establish a department or institute of human biology, which would be centered around the existing department of anatomy, but including members from other departments. This would include five sections: (1) genetics, (2) growth, (3) constitution, (4) bodily adjustments and (5) behavior.

This proposal would require a considerable shift in viewpoint of the

approach of the student to preclinical subjects and obvious reorganization in the first-year work. Its objective would be "the development in the student of a concept of man as a total organism, having definite inherited attributes, with capacities for growth, development and deterioration and subject to innumerable environmental influences — physical, psychological and sociological."<sup>9</sup> Cummins<sup>10</sup> has also emphasized the advantages of approaching medical education from the viewpoint of human biology.

A somewhat similar line of reasoning concerning the emphasis on man as a total organism has led others to suggest that medical genetics should be included in the division of preventive medicine. This suggestion is somewhat more clinically oriented, and rests on the suggestion that the individual patient must be considered in relation to both his family background and his sociologic environment, with proper correlation of genetic, physical, psychological and sociological factors in the broad concept of health, both as applied to the individual and as applied to the community.<sup>11</sup>

### **Principles**

It is the opinion of the writer that no one method of organization or of approach to teaching exists at present that will be entirely suitable in all situations. Obvious difficulties include the scarcity of medical instructors with adequate training in genetics, the already overloaded nature of the curriculum and the chronic lack of teaching funds. General principles that seem to have worked well in practice include the following:

1. Instruction in basic principles of human genetics should be given

C. Nash Herndon

during the preclinical years, with due regard to correlation with instruction in other basic sciences.

2. Clinical applications of medical genetics should be stressed during the third year, with emphasis upon the concepts of preventive medicine.

3. As genetic principles have application to so many phases of medicine, correlation with both preclinical and clinical departments is essential.

4. It would seem that the development in the student of a point of view or attitude, that of considering man as an integrated organism with due regard to genetic, physical, mental and social factors, is more important than simply presenting genetics as an isolated body of knowledge.

The concepts enumerated above may well be incomplete, and some revision will doubtless be required in specific situations. Each school of medicine will need to evaluate the question of genetic teaching in relation to its own unique requirements and opportunities.

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# Preprofessional and Professional Education in Medicine

EDWARD L. TURNER

**A**S KNOWLEDGE ACCUMULATES with ever-accelerating rapidity, medical education has begun to undergo a great deal of "face lifting" and interesting experimentation is going on in many of our medical schools. To adequately prepare students for the dynamic activities of medical training today there is need for considerable rethinking in regard to premedical education. Our new tools and technologies have brought about social changes which have been shifting all aspects of life, including the diagnosis and treatment of disease and the very nature of medical practice. In spite of the tremendous implications of new technologies they are, in the field of education, sometimes stubbornly resisted emotionally, with the result that we cling to obsolete standards and conventions of the education of the past, either fearing or failing to follow the logic of what may today be in man's better interests.

Man has need for insight and intellectual power to utilize the entire body of culture and civilization. He cannot turn away either from past knowledge or from present reality. Effective use of knowledge today must be in relationship with socio-

biological objectives. The right kind of utilization of past knowledge integrated effectively with new knowledge and the reality of today gives to human life content, direction and some sense of security.

Sir Lionel Whitby, in his presidential address before the First World Conference on Medical Education in London last August, stated that, "The first challenge which has come to the fore in the second half of the 20th century is not confined to medical education but is levelled at education itself, whatever calling or profession a man or woman is to take up." Regardless of what calling is being considered, challenges lie in three directions in education: (1) to the teachers, (2) to those they teach and (3) to what they teach. Where there is failure or inadequacy in any of these, the results of educational exposure may be disappointing.

In trying to analyze some of the problems and needs in premedical and medical education it might be worthwhile to ask ourselves "What is education?" Sir Richard Livingstone writes that an education "should prepare us, either by a general or a vocational training, to earn our bread; it should give us some understanding of the universe and of men; and it should help us to become fully developed human beings." He points out that the first aim, that of breadwin-

Dr. Turner is secretary of the American Medical Association Council on Medical Education and Hospitals. This article is adapted from his address at the Conference on Premedical Education, University of Illinois College of Medicine, October 1953.

ning, is the least likely to be overlooked, and that the latter two aims of making intelligent citizens of the world and good human beings are the most important to us as men, but less obvious, more difficult and more readily neglected.

Education should be a preparation for "feeling at home and living intelligently on the stage where we find ourselves." Livingstone further indicated that we humans need instruction as to how to behave on this stage and that there are four points of good behavior that should be kept in mind. One of these is the necessity of learning how to express ourselves intelligently to others. The second is to know how to read and understand a book. The third is to think clearly and logically, and the fourth is to have the insight that comes from sensitiveness to supplement and correct the knowledge which comes from hard thinking.

#### A Simple Philosophy

Furthermore, Livingstone points out that an education which leaves individuals without a philosophy of life is as incomplete as one that leaves individuals unable to think or express their thoughts. He indicates that there is a very simple philosophy which gives standards of value and judgment applicable to all spheres of human activity which might be called the *philosophy of the first-rate*. Regardless of race or creed, people in all fields of life will admit to the philosophy of the first-rate. Certainly an educated individual should know the first-rate in the most important human activities.

We know the first-rate by seeing it, by experiencing it and through contact with it. We know the first-

rate in food by tasting it, the first-rate in literature by reading it, the first-rate business by dealing with it and first-rate medicine through contact with those who know it and practice it in first-rate fashion. Education should be the midwife that brings this philosophy of the first-rate to birth and that indicates its fruitfulness to those who accept it as well as to those they serve, regardless of the field of human endeavor.

#### Education and Medicine

Thus it would seem well worthwhile in considering matters of pre-professional and professional education to think of them first in terms of the philosophy of the first-rate. This should be recognized as an ever-current challenge to education itself if such a philosophy is to be gained by students during the process of their preprofessional and professional exposure. Furthermore, if the value of the philosophy of the first-rate is recognized, it must be thought of in terms of first-rate students, first-rate teachers, first-rate facilities and first-rate opportunities in educational experience.

Preprofessional education for medicine today offers increasingly difficult challenges. Such rapid strides have been made during the first half of the current century that the very nature of medical practice has changed. Advances in chemistry, physics and biology have given much clearer insight into the mechanisms of biological activity and have necessitated greater understanding of these sciences on the part of individuals contemplating the study of medicine.

Do we prepare our students in their preprofessional years so that they have a reasonable grasp of the principles behind these sciences

which they must use? How much chemistry, how much physics, how much biology, and in each instance what kind, are questions of real concern today. With the increased knowledge available in each of these fields today, preprofessional students could spend their entire period of preparatory study in these areas alone if careful evaluation and guidance is not given to what they need, why they need it and how it is to be utilized.

The specialists in these scientific fields are frequently inclined to be little any effort to design special types of courses for individuals needing basic knowledge, but not intending to specialize in their fields. Here is where, through lack of knowledge and perspective as to the needs in medicine, much stilted and unproductive teaching can be done and a great deal of time wasted on the part of both students and teachers in the preprofessional period. This whole area needs careful analysis and review with material curriculum readjustments eventually resulting from such studies.

The increasing scientific specialization of recent years has crowded the preprofessional curriculum with so much science that there has been an increasing reaction towards the poverty of mind frequently seen in the pure science student and the medical student due to lack of general education in such fields as the humanities, literature, history, language and the fine arts. The finest of scientists would be of little value as a physician if he did not understand a bit about the world in which his patients lived and be able to appreciate fully the multitude of sociological and economic factors involved in practically all situations. Patients are human beings and if

the physician of the future is to approach them and understand them as such he must have an appreciation of civilized values aside from his depth of scientific knowledge. During recent years the study of man in his relation to his environment—human ecology—has resulted in a general awakening and growing consciousness of the overall importance and necessity of individuals entering medical study being well grounded in this field.

Thus it appears that there is need for much more thought to be given to intelligent background planning of education in preprofessional areas. There is no need nor any desire to stereotype preprofessional training. There is need, however, for discarding some of the traditional concepts of what constitutes an education that was satisfactory prior to the 20th century, and begin to think of some of the things needed today.

#### **The Remedy**

How can the preprofessional years be more effectively spent to meet the requirements of today's professional challenges? This is where cooperative planning on the part of professional faculties with preprofessional faculties could yield large and effective dividends. It would mean a lot of work, the discard of a lot of tradition and the development of materially modified curricula. But for what do we have our huge investment in higher educational institutions unless they can recognize these new problems and effectively set to work to solve them? What is taught and how it is taught in preprofessional and professional years must receive constant attention and revision if it is to avoid obsolescence.

If what is taught and how it is taught is to be effective, the chal-

lence to those who teach should be one that is eternally fascinating. Imagination is not allowed the freedom it should have in this area. Methods of presentation can be as important as the material being presented. In today's research-minded academic world, too frequently teaching has assumed a minor role, particularly when promotion and financial reward have tended to favor the investigator rather than the teacher.

The ideal faculty member, whether preprofessional or professional, is the one who combines effective talents in both teaching and research. Many such individuals exist and they become the dynamic stimulators that light the spark in their students. Today we do need re-emphasis on good teaching and on effectively rewarding good teachers as well as good investigators. A good science teacher or a good teacher in any field can stimulate an intense interest in the history of his subject with its social and economic implications as well as in the accumulation of current knowledge of the field in question. This in itself tends to give perspective to education in any area.

#### **The Student**

The question of students has been left to the last here although perhaps it should have come first, for educational programs of any kind with no one to learn from them would be of little merit. On the other hand, without a curriculum that is of real value or teachers who have potentialities, there would be equally small merit in having students.

Although many students know at the time they go to college or university of their desire to prepare for entrance to a medical school, a goodly number do not reach such a decision

until well embarked on their college career. Thoroughly good preprofessional advising can do much to direct students either toward or away from a professional career if the advisors are fully aware of the qualifications needed by students planning to study medicine. What do we as physicians and medical educators believe to be the qualities of character and proficiency desirable in potential medical students and future physicians? Here is another area where closer co-operation between preprofessional and professional groups in education can pay real dividends.

Because of the very nature of medicine it is important that potential candidates for the profession be intelligent, intellectual, possess integrity beyond question, be human and sympathetic. They should be individuals who have the capacity of developing a genuine love for their profession and an understanding of their fellow human beings with all of their weaknesses, joys and sorrows.

Good student selection and good advising take time. They require keen insight and understanding of young people. Properly conducted, they are expensive because of the caliber of individuals needed to conduct them and the time factor involved in good selection and advising. On the other hand, there seems to be no function of a college or university more important than that of aiding young people—the students seeking their education—find themselves. This is where many of our institutions of higher education fall down pathetically and where real effort should again pay handsome dividends in avoiding many of the wastages that go with college and university life today.

There is an old Chinese proverb

### *Preprofessional and Professional Education*

to the effect that "You cannot carve rotten wood." True enough, if the basic potentialities are not present efforts to prepare youth for professional training will be of no avail. On the other hand, a piece of driftwood carefully cleaned and polished or carved into an attractive and useful item by one who can recognize the inherent beauty in it may become a thing of beauty and a joy forever. Careful selection, sincere and intelligent guidance and exposure to the first-rate in opportunities from the standpoint of curriculum and teachers cannot help but bring to medical schools those students who have developed a basic philoso-

phy of the first-rate that should call forth the best from each and every medical faculty in the nation.

If we as medical educators have our sights set on the philosophy of the first-rate and constantly work towards its achievement there will be continued effort to find ways and means of doing our task better. It is the philosophy which, if possessed by those of us who teach and practice and passed on to our students, can guarantee for medicine and for those whom medicine serves continued striving toward the best in health, happiness and general welfare—and the progress that current knowledge makes possible.

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# Medical School Enrollments

## from 1945 to 1955

JOHN M. STALNAKER and ROSS A. DYKMAN

THE *Journal* of the American Medical Association in its Educational Number has come to be the authoritative source for figures on medical school enrollment. It does not give figures for a school until the school is approved. The following table has been prepared to give total enrollments over the past 10 years. The grand totals are a composite of figures given by the AMA for the approved schools, and figures of the Association of American Medical Colleges on schools which are in the process of being approved. The records of the AAMC cover all medical schools whether or not they have been officially approved.

The University of Washington, for example, did not enter tabulations reported in the *AMA Journal* until 1949-50. Prior to this, the school had enrolled three freshman classes, two sophomore classes and one junior class. The section of the enclosed table entitled "Schools in Transition or New Schools" gives the figures omitted from the published report.

As another example, consider North Carolina. This school has been in operation as an approved two-year school for many years, and in 1952-53 initiated a four-year program. In the table they are entered as both a

two-year school and as a school in transition. Their freshman and sophomore classes are counted in the two-year school section and their junior class in the new school section. North Carolina should appear in the Educational Number of the *AMA Journal* for the first time as a four-year school in the 1953-54 edition.

The data for 1953-54 and 1954-55 shown below the dotted line are based on estimates. The number of freshmen for 1953-54 was obtained from enrollment cards, and the number of freshmen for 1954-55 was based on figures supplied by the medical schools for the "Admission Requirements" booklet. Total enrollment for both these years is estimated.

Medical education has expanded considerably since 1945. There will be approximately 4,900 more students in medical schools in 1954-55 than in 1945. This increase is especially significant when evaluated in terms of the tremendous cost of expansion and the difficulties involved in obtaining qualified teachers.

During the period covered by the table, three schools have opened: University of Washington, University of California at Los Angeles and Miami; two have expanded their programs to give four years of education: Alabama and North Carolina; and one additional school has gained approval: Chicago Medical. Further

Mr. Stalnaker is the director of studies and Mr. Dykman is a research associate of the Association of American Medical Colleges.

**Medical School Enrollments 1945-1955**

**Medical School Enrollments 1945-1955**

Year	Approved Two-Year Schools			Approved Four-Year Schools			Schools in Transition and New Schools			Grand Totals		
	Number of schools	All Fresh-men	All four classes	Number of schools	All Fresh-men	All four classes	Number of schools	Fresh-men	All four classes	Number of schools	Fresh-men	All four classes
45-46	8	264	503	69	5,796	22,691	2 <sup>a</sup>	75	292	78	6,135	23,486
46-47	7	249	429	70	6,315	23,471	2 <sup>b</sup>	125	317	79	6,489	24,217
47-48	7	274	491	70	6,213	22,240	2 <sup>b</sup>	120	346	79	6,607	23,085
48-49	7	279	524	71	6,409	23,146	1 <sup>c</sup>	48	137	79	6,736	23,807
49-50	7	283	556	72	6,759	24,547	—	—	—	79	7,042	25,103
50-51	7	289	558	72	6,893	25,633	—	—	—	79	7,182	26,191
51-52	7	288	561	72	7,153	26,515	1 <sup>d</sup>	28	28	80	7,469	27,104
52-53	7	285	553	72	7,140	27,135	3 <sup>e</sup>	68	140	81	7,493	27,028
53-54	6	231	445	73	7,172	27,494	2 <sup>f</sup>	75	161	81	7,678	28,100
54-55	6	231	445	74	7,214	27,850	1 <sup>g</sup>	44	105	81	7,489	28,400
<b>Totals</b>	<b>2,673</b>	<b>5,065</b>		<b>67,064</b>	<b>250,730</b>		<b>583</b>	<b>1,526</b>		<b>70,326</b>	<b>257,321</b>	

**FOOTNOTES TO TABLE**

All footnotes refer to schools not listed in totals published in the Educational Number of the Journal of the AMA.

<sup>a</sup>Alabama appears in two columns this year, once as an approved two-year school and once as a four-year school because it is in transition to a four-year school, but there is no duplication of students in the total given. The other school not listed by the AMA at this time is Chicago Medical.

<sup>b</sup>Chicago Medical and University of Washington were not approved at this time.

<sup>c</sup>Chicago Medical was approved in 1948-49 leaving only the University of Washington in this column.

<sup>d</sup>U.C.L.A. enrolled its first class this year but is not eligible for approval.

<sup>e</sup>North Carolina appears in two columns this year, once as a two-year school and once as a four-year school, but again there is no duplication of students in the totals. Both Miami and U.C.L.A. are enrolling students this year but neither is approved.

<sup>f</sup>North Carolina has been approved as a four-year school this year. This leaves Miami and U.C.L.A. still to be approved.

<sup>g</sup>U.C.L.A. will be eligible for approval this year. This leaves Miami which will be eligible for approval in 1955-56.

expansion is seen in the near future: Missouri and West Virginia are considering changing from two- to four-year schools and plans for opening

new schools are being developed by the University of Florida and Yeshiva University (Albert Einstein College of Medicine).

# A Comparative Study of Student Performance in Medical Schools Using National Board Examinations

JOHN P. HUBBARD and JOHN T. COWLES

**E**XAMINATIONS ARE customarily used to measure the individual student, to find out if the student has been successful in acquiring knowledge, judgment and skills in his learning experience. Examinations can, however, have other values. When the same examination is used in a number of schools, the performance of the students in one school may be compared with that of students in other schools, thereby reflecting group differences. The product then serves as a measure of the process.

The examinations of the National Board of Medical Examiners are now being used in a sufficient number of medical schools throughout the United States to provide the basis for a comparative study\* of student performance in a representative group of schools. During the academic year

1952-53 there were 16 schools in which Part I examinations\* were either required for all students or taken on an elective basis by virtually the entire class; similarly there were 15 using the Part II examinations.\*\* The medical schools included in this group are listed in Table I. The total number of students taking the examinations in these schools comprised a total of approximately 1,500 in Part I and a total of 1,366 in Part II.

## Validity and Reliability

Before sound conclusions can be drawn from the use of examinations, confidence in their validity and reliability must be established. A previous article in this Journal† reported in considerable detail the results of a four-year study of the adequacy of the newly developed ob-

\*Grateful acknowledgement is made of the generous grants by the John and Mary R. Markle Foundation for support of this study. Acknowledgement is also made of the contributions of Richard S. Levine of Educational Testing Service to the statistical methodology of this special study and the contributions of Harry W. Garrison, also of ETS, for developing new machine techniques for processing the data.

Dr. Hubbard is professor of public health and preventive medicine of the University of Pennsylvania School of Medicine and executive secretary of the National Board of Medical Examiners. Dr. Cowles is senior project director of the Educational Testing Service.

\*\*Part I includes examinations in the following six subjects: anatomy, including histology and embryology, physiology, biochemistry, pathology, microbiology and pharmacology.

†Cowles, J. T. and Hubbard, J. P.: "Validity and Reliability of the New Objective Tests of the National Board of Medical Examiners," *Journal of Medical Education*, June 1954, Vol. 29, No. 6.

## *Student Performance in Medical Schools*

**Table 1**

### **MEDICAL SCHOOLS THAT USE NATIONAL BOARD EXAMINATIONS**

(including Columbia University College of Physicians and Surgeons, Harvard Medical School and New York University College of Medicine where national board examinations are not required but are taken by virtually the entire class)

Albany Medical College	Harvard Medical School
University of Arkansas School of Medicine	**New York Medical College
Boston University School of Medicine	New York University College of Medicine
University of Buffalo School of Medicine	*Ohio State University College of Medicine
**Chicago Medical School	State University of New York College of Medicine at N.Y.C.
Columbia University College of Physicians and Surgeons	*State University of New York at Syracuse College of Medicine
*Georgetown University School of Medicine	Temple University School of Medicine
George Washington University School of Medicine	Tufts College Medical School
Hahnemann Medical College	Yale University School of Medicine

\*Require Part I only

\*\*Require Part II only

jective, multiple-choice tests which are now in use in all the written examinations of the national board. As pointed out in this earlier report, those who prepare an examination constitute the most important factor for insuring its validity (validity being defined as the degree to which a test distinguishes between those who, by accepted standards, are well qualified and those who are not well qualified in the subject of the test). Each of the examinations is prepared with the utmost care by a separate national board test committee specially appointed for that subject. The members of these test committees are medical school department heads and teachers with recognized prominence in their own fields. They are selected with wide geographic distribution. Technical guidance in the design of questions and statistical analyses of the results is provided by test experts of the Educational Testing Service. Correlations between the new multiple-choice examinations and the essay form previously used by the national board, and correlations with independent ratings of

students in their own medical school departments have demonstrated that the multiple-choice examinations have very satisfactory validity and higher validity than the essay tests.

The reliability of the new tests (reliability being defined as the degree to which the test measures a person's ability in a precise and stable way) also has been shown to be high. This reliability of measurement is largely due to the use of a large number of questions on each test in which the selection of each question has been guided not only by the considered judgment of the test committee but also by detailed statistical analyses. The variability, which is characteristic of the grading done by individual examiners, has been eliminated by machine scoring. Moreover, standard techniques of score scaling and year-to-year equating of the scale are now applied to each test.

#### **Student Performance**

For each examination, the test committee responsible for that exam-

**TABLE 2**  
**MICROBIOLOGY**  
**Mean Category Scores for Each of 16 Schools**

	School code	Number of candidates	CATEGORY																																
			Bacterial physiology and chemistry; nutrition			Morphology, classification, genetics			Effects of physical and chemical agents, chemotherapy, antibiotics			Infection and resistance			Antigens, antibodies and their reactions			Hypersensitivity			Immunization procedures			Bacterial infectious diseases, including pathogenesis and laboratory diagnosis			Viral and rickettsial diseases, including pathogenesis and laboratory diagnosis			Mycology			Parasitology		
C	53	7.7	12.6	10.3	8.0	15.3	6.5	6.5	36.1	18.0	4.9	15.0	140.9																						
F	75	6.1	11.1	9.1	7.0	13.2	6.4	4.4	33.4	12.2	6.6	15.1	124.8																						
O	72	7.1	11.5	9.0	7.3	14.2	6.9	6.7	35.7	16.0	6.4	14.4	135.2																						
B	71	8.0	13.9	10.4	8.9	16.2	7.4	7.1	38.4	19.0	6.1	12.8	148.3																						
T	101	7.4	12.9	9.2	7.4	14.9	7.3	7.0	36.7	18.7	5.4	15.2	142.0																						
N	111	6.5	12.9	8.8	8.2	13.2	6.9	5.9	33.8	14.2	5.0	12.8	128.2																						
A	75	7.6	12.6	10.0	8.4	15.4	7.0	7.0	36.8	17.2	5.7	13.0	140.7																						
Y	94	6.1	14.1	10.0	8.3	15.0	7.5	6.8	38.7	17.4	6.9	13.7	146.5																						
S	109	7.8	12.6	10.0	8.0	16.6	7.0	7.2	36.7	16.8	6.8	12.8	142.2																						
D	124	8.4	14.9	9.1	8.6	16.6	7.1	6.7	39.2	17.1	6.6	14.8	149.1																						
P	135	7.7	14.0	10.4	8.6	16.4	7.0	7.0	36.5	17.0	6.1	17.6	149.1																						
K	133	7.5	10.9	10.0	7.5	14.9	6.4	5.8	34.7	12.6	5.4	9.4	125.1																						
V	70	8.0	13.2	10.0	7.7	14.2	7.5	7.0	35.9	19.6	5.5	13.5	142.2																						
E	122	7.8	13.9	9.9	8.2	16.6	8.0	6.9	41.3	19.2	7.6	15.1	154.4																						
I	108	7.4	13.0	10.0	8.1	16.2	7.5	7.1	35.8	17.1	5.6	14.6	142.4																						
J	78	6.1	13.6	10.5	9.1	15.7	7.8	7.2	37.9	20.7	7.8	14.2	152.7																						
All schools	1531	7.6	13.0	9.8	8.1	15.4	7.2	6.7	36.8	16.9	6.2	14.0	141.6																						
Number of items		12	17	15	12	22	12	10	55	33	10	22	220																						
Per cent right for all schools		63	76	65	68	70	60	67	67	51	62	64	64																						

Student Performance in Medical Schools

TABLE 3  
OBSTETRICS AND GYNOLOGY  
Mean Category Scores for Each of 15 Schools

CATEGORY	School code		Number of candidates	Mean Category Scores for Each of 15 Schools																		
	C	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Embryology, anatomy and physiology of female organs of reproduction	8.0	12.4	6.7	12.0	9.6	14.5	13.9	10.8	16.6	11.2	30.1	145.7										
Pregnancy	6.9	12.9	7.0	11.8	9.9	14.7	13.8	10.7	15.6	11.1	30.1	144.5										
Physiology and conduct of normal labor and puerperium	7.2	12.3	7.0	12.0	9.9	14.3	12.5	11.4	15.6	11.3	29.6	143.0										
Complications of pregnancy—toxemia	6.9	12.3	6.9	12.4	10.2	15.1	15.7	11.4	16.0	12.5	31.5	151.7										
Complications of pregnancy—systemic infections	7.6	11.3	6.7	12.0	9.1	13.2	15.2	11.0	15.5	11.6	30.1	143.2										
Complications of pregnancy—others	7.6	11.3	6.7	12.0	9.5	15.4	12.0	11.5	17.2	11.5	29.7	145.8										
Complications of labor and indications for obstetric operation	7.0	12.8	7.2	11.9	9.5	15.4	12.0	11.5	15.6	11.7	30.9	154.4										
Complications of puerperium	7.7	12.7	7.7	12.9	10.4	16.1	15.6	11.7	16.3	11.7	31.7	153.6										
Hygiene and physiology of woman and function disturbance	8.0	11.7	8.0	12.6	10.3	16.8	16.4	11.3	15.9	11.4	31.7	153.6										
Malformation and malposition of pelvic organs, infections of reproductive tract, extra-genital pelvic lesions	8.0	12.9	7.5	12.7	11.1	15.6	14.8	11.5	17.1	10.6	29.2	150.9										
Neoplasms	8.5	13.3	7.7	12.5	10.3	15.8	15.4	11.4	16.8	13.1	31.4	156.2										
Total test	6.9	11.8	7.6	12.3	10.2	15.8	15.4	11.6	17.2	12.2	31.9	156.4										
Number of items	11	18	12	18	14	22	20	15	23	16	41	210										
Per cent right (for all schools)	69	69	61	67	71	68	74	76	71	73	74	71										
All schools	1366	7.6	12.5	7.3	12.1	10.0	15.0	14.7	11.4	16.4	30.4	149.2										

ination subdivided the subject matter into approximately 12 subdivisions or "categories." Each question was assigned to the one category to which it was principally related. The performance of the students in answering the questions of each category then formed a basis of the comparison of the schools. A mean score was computed for each category for each school. In effect, each student's answer paper was scored on the items (questions) comprising each category, thereby deriving for each student's test paper a set of category "scores." Since every test item was included in one and only one category, the sum of the category scores equalled the total test score. For each school, then, the mean category score became the mean of these individually derived scores for all students tested in that school. No individual student's category scores were reported separately.

In order to show the manner in which all subjects have been analyzed, tabulated and charted for each of the six subjects of Part I and for each of the five subjects of Part II, one subject has been selected from each part—microbiology from Part I and obstetrics-gynecology from Part II.\* For these two examinations, Tables 2 and 3 show the mean score for each category for each school included in the sample. In addition to the mean category score, each table indicates the number of students tested, the number of questions in each category, and, in the bottom row, the mean for the total group of students on each category expressed as a per cent of correct responses made by the total group of students in each category.

Bar charts (Figures 1 and 2) show

\*Complete data are recorded in multilithed reports for all subjects; a limited number of complete reports are available on request from the senior author.

more clearly the range of success with which the entire group of students answered the questions in each category. Thus, in the microbiology examination (Figure 1) in the category of questions labeled "Viral and Rickettsial Diseases," the total group of students answered 51 per cent of the questions correctly. They had more success in answering the questions dealing with morphology (76 per cent correct responses). A similar variation appears in the obstetrics-gynecology examination (Figure 2) where students had trouble with the questions dealing with normal labor (61 per cent correct), while they did better with the questions about the complications of the puerperium (76 per cent correct).

It should be noted that these comparisons are based on groups of questions none of which contains less than 10 questions. It is a temptation to draw conclusions from the success of a group of students in answering a single item which may be thought to have particular value in revealing the student's knowledge of an important point. But, considering the limited area covered by a single multiple-choice question, conclusions based on any single question, even though the data were quite reliable, would be of dubious significance. In this study, therefore, statistically reliable differences among schools obtained on groups of less than 10 items were considered to have no practical educational significance.

In interpreting the data in these tables and bar charts one question immediately arises: are the differences in per cent right responses for the several categories a real reflection of student knowledge in a particular category, or are the results merely due to more difficult items in one category than in another? This question cannot be answered from

## *Student Performance in Medical Schools*

our data, since it is impracticable to compute item scores or category scores corrected for relative difficulty of those items or categories. It was not, however, our purpose to compare the difficulty of categories, but rather to determine the extent to which student performance in any one school differs from the mean performance in all schools.

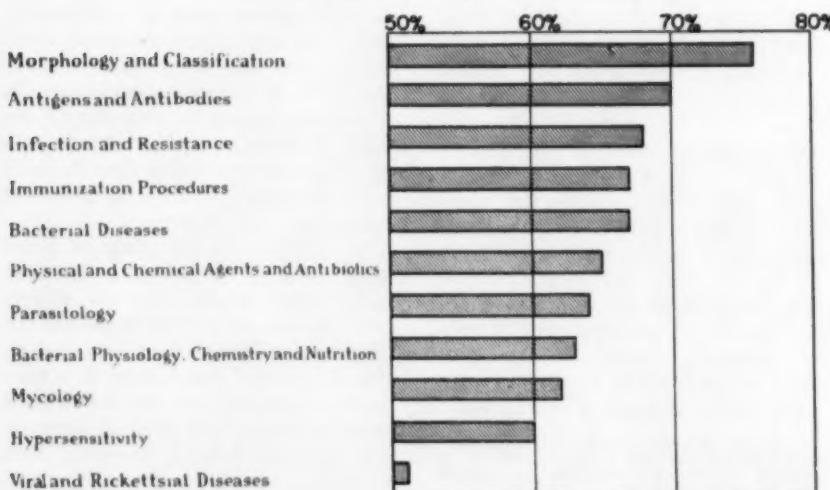
### **Comparative Performance**

In order to demonstrate the comparisons of student performance in the schools, the variability of the mean scores obtained by students in the several schools is shown graphically in Figures 3 and 4 for the two subjects, microbiology and obstetrics-gynecology, used as examples for the purposes of this paper. For each category the schools, designated by a

code letter, appear in rank order of their mean performance, the school with the highest mean appearing as the highest point on the line representing the category. The ordinates are presented as standard deviates of school means.\* The horizontal lines at -2.6 and +2.6 standard deviates divide the graph in three arbitrary regions. Assuming the points on this scale have a normal distribution, if there were no true differences among the schools, the chances would be less than one in 100 of a school mean falling in the region above the upper line or the region below the lower line. Thus, if a school mean falls in one of these outer regions, it is likely

\*This measure is based on the ratio of among-schools variability to within-schools variability, as determined in analysis of variance. The difference of any one school's mean from the group mean is divided by an average standard deviation of scores within the schools, and the resulting quotient is plotted on the standard scale.

**FIGURE 1**  
**MICROBIOLOGY**  
Percent Correct Answers by Categories of Subject Matter  
(16 Schools in Sample)



that the performance of its students is truly different from that of the total group of students.

It should be noted that the vertical distance between any two points on the graphs is proportional to the magnitude of the differences between the means only within one category. However, the units in which the graphs are drawn have been reduced to a "standard" scale which essentially equates the number of items in each category, and thus permits category-to-category comparisons—but only in terms of this standard scale. It should also be noted that equal increments in standard deviates do not represent equal increments in probability. As one moves away from the overall mean (standard deviate equals 0) the difference in probability associated with a fixed

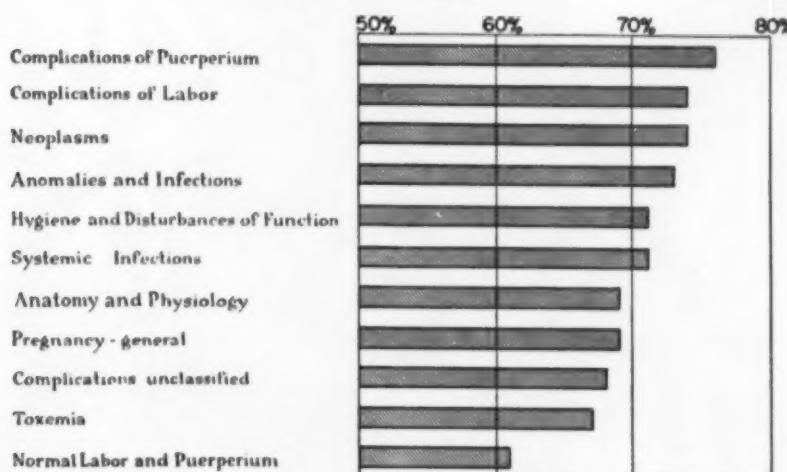
difference in standard deviate becomes smaller.

When reviewing these graphs, one should bear in mind that strikingly large deviations indicate only that the likelihood is very small that the observed difference occurred by chance. With as large a total group as was used in this study, relatively small differences can become statistically reliable; therefore, not all of the reliable differences may be judged to be of primary importance. The question should always be asked: do the observed differences have practical educational significance?

#### A Profile of Performance

By connecting the points representing a particular school, it is possible to draw profiles of the per-

**FIGURE 2**  
**OBSTETRICS AND GYNECOLOGY**  
 Percent Correct Answers by Categories of Subject Matter  
 (15 Schools in Sample)

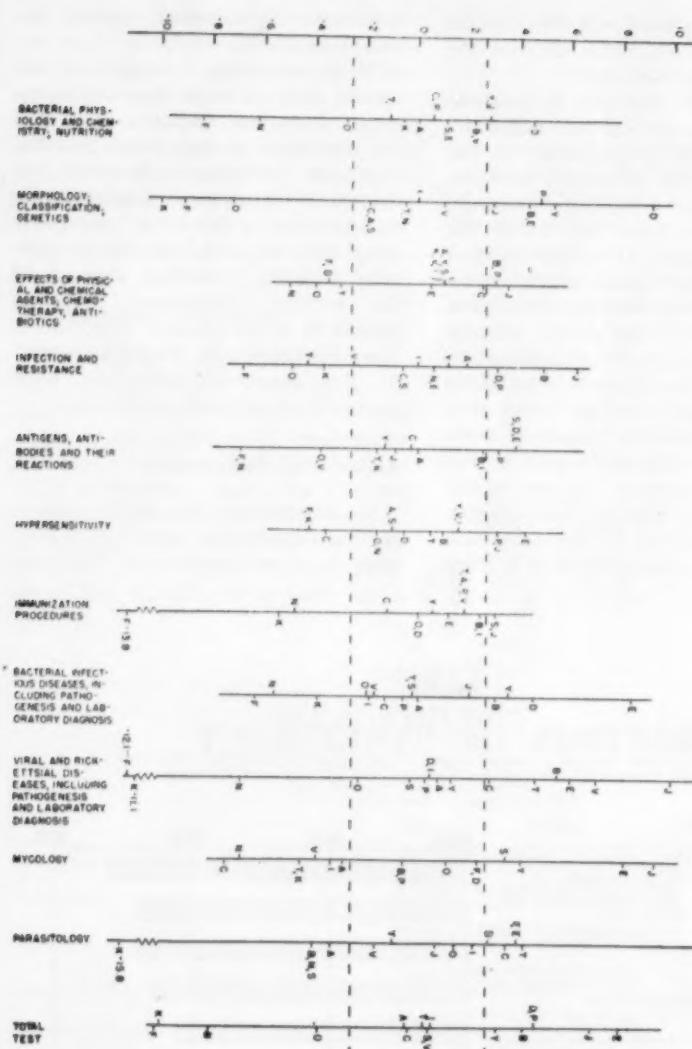


## Student Performance in Medical Schools

STANDARD DEVIATION

STANDARDIZED DEVIATIONS OF SCHOOLS' AVERAGES FROM OVERALL AVERAGE

FIGURE IX  
MICROBIOLOGY

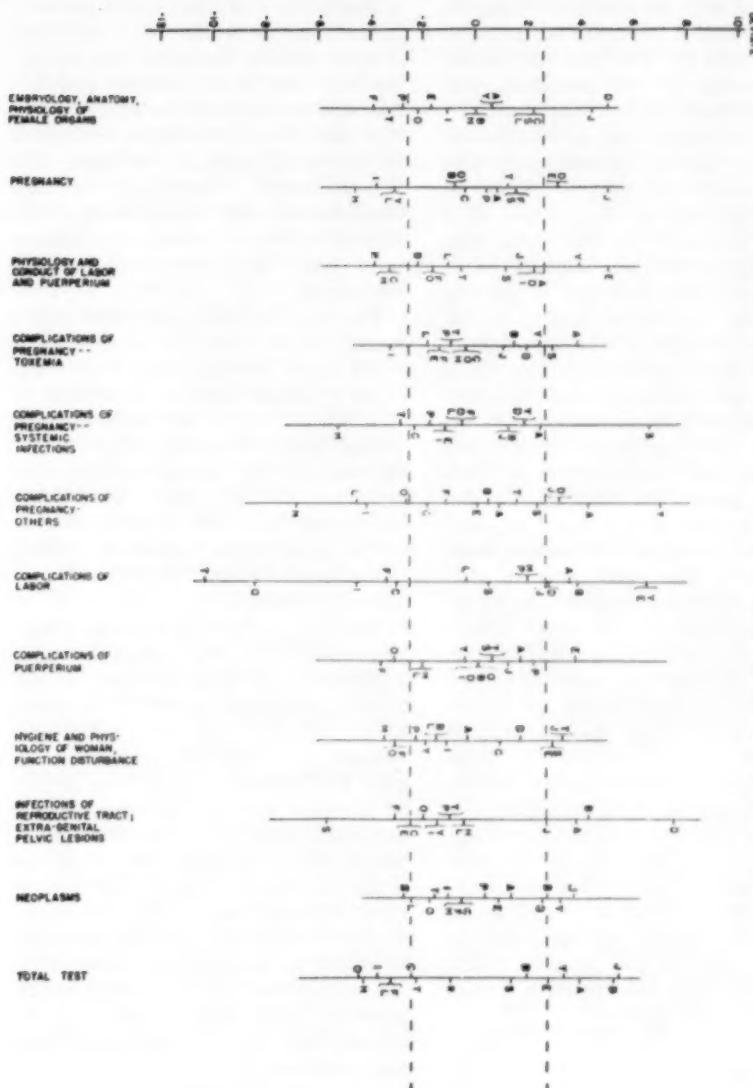


formance of the students in that school. This procedure will dramatically demonstrate whether the students of a certain school are consistently high, low or average in performance. Another school may show wide fluctuations around the group

mean, high in some categories and low in others.

Thus, in the graph showing student performance in microbiology, school E rates highest on the total test, as indicated by the column on the extreme right. If, however, the E points

FIGURE III  
OBSTETRICS - GYNECOLOGY  
STANDARDIZED DEVIATIONS OF SCHOOLS' AVERAGES FROM OVERALL AVERAGES



are followed across the graph, it is seen that the students in this school had the highest mean score in only two or three of the 11 categories, although they were clearly better than

average in seven categories, and below average in no category. On the other hand, the students of School F, lowest on the total test, were below average in all but two categories:

## *Student Performance in Medical Schools*

mycology and parasitology. Another school, coded T, appears in the central channel for the total test, better than average in two categories and below average in two categories.

Similar comparisons may be drawn from the charts derived from the obstetrics-gynecology test. The school which was highest in this test as a whole, School J (which was also very high in the microbiology test), was better than average in several categories, was at the top in a few and was average in other categories. School T again shows wide variations from top performance in one category to lowest performance in another.

Thus, the profiles show the strengths and weaknesses of each student group as reflected by the particular test. But a word of caution is indicated in interpreting these profiles for the significance of differences in profile patterns cannot be easily determined and many differences may not be true differences. In fact, it may be reasonably expected that a single school, by chance factors alone, might show a marked deviation in one category mean among many other category means.

Charts such as those used in microbiology and obstetrics-gynecology have been prepared for all 11 subjects of the national board examinations of Parts I and II. A full set of tables and charts for all subjects, together with an explanatory statement, has been sent to each school included in the study.\*

### **Limitations**

In general, any examination is an imperfect evaluation of a student. No matter how good the test may be thought to be, no matter how great

\*When sending the report to each school, only the code letter of that school was identified. The code itself is held in strict confidence.

a degree of statistical significance is attached to its validity, it is an index of only certain characteristics, measured at one point in time and influenced by variable factors. Normative test data of the kind developed in this study require, for their full interpretation, knowledge of the characteristics of each student group and of the total group of students with which its performance is being compared.

Perhaps the most important single factor which underlies gross differences in the performance of students from a varied sample of schools is the initial caliber of each student group. Medical schools differ in requirements for admission and the selected students vary in fundamental abilities and previous educational experience, especially when students are drawn from different geographic regions.

The performance of a group of students on a test of this nature is also determined to a considerable extent by their desire to do well. This desire to do well is strongly affected by the reasons for which they are taking the test. For example, if for one group of students the test is required and the grade used as one factor in computing the final grade for a course, while for another group the test is on a voluntary basis, then the motivation of these two groups would be expected to be different. Other factors influencing the motivation of the students might differ from school to school and would similarly affect test performance.

Furthermore, any test represents a considered but arbitrary small sample of test questions from among the many questions required to cover the varying curricula, varying emphases, varying requirements for course mastery or varying time since last exposure of students to the given course

content. School performance on only a small set of questions, as from only one area of a test, is obviously more affected by the test committee's final choice of the particular questions for that small portion of the test, than on the test as a whole. It is far more likely that there will be marked differences among groups of students on a short test, such as a single category, than on a long test. Conversely, comparisons made on the basis of total test scores are statistically and educationally the most trustworthy.

Another point that should be borne in mind is the fact that performance in one category of one test does not necessarily reflect the teaching content or quality of the medical school department responsible for that particular subject. For example, in the obstetrics-gynecology examination, the student's knowledge in the category of embryology, anatomy and physiology of the female organs will obviously include knowledge acquired in earlier courses in anatomy and physiology. Similarly correct answers to questions on the infections of the reproductive tract may reflect teaching in microbiology, clinical medicine, preventive medicine or almost any other subject. A good score in any one category indicates merely that somewhere during the course of his training, through the teaching in one department or another up to that point, the student has gained sufficient knowledge to answer these specific questions.

Finally, we wish to make it per-

fectly clear that in presenting the results of this study there is no implication of criticism of the curriculum content or teaching in any school. The national board has as its sole objective the preparation of the best possible examinations and their analysis and scoring in conformity with sound statistical methods. Any medical school faculty properly retains the right to determine for itself the importance to be placed upon any subject or any aspect of any subject. If its students perform less well than other students in any category of subject matter, the fact may be looked upon as quite unimportant if, in that school, the faculty has advisedly given comparatively little attention to that subject.

#### Conclusion

The purpose of this study has been to record accurately and in detail the performance of medical students in examinations which are used in a sufficient number of schools and which have sufficient validity and reliability to offer an evaluation of the student performance in the schools concerned. The data provide a basis upon which one school may compare the product of its teaching with that of other schools included in the study. It is our hope that the results may be found useful in these schools and may demonstrate the availability of methods to measure not only the student but also certain aspects of the quality of medical education.

# The Psychiatric Social Worker as an Aid to Group Process Teaching

KENNETH E. APPEL and MARGARET M. HEYMAN

A NEW COURSE, entitled "Introduction to Clinical Clerkship for Second-Year Students," developed at the University of Pennsylvania School of Medicine during the academic year 1951-1952. The teaching, shared by various departments, included such subjects as physical diagnosis, history taking, clinical microscopy and simple diagnostic aids. Psychiatry was one of the participating departments. The psychiatric assignment was conceived as an excellent opportunity to offer the student instruction, experience and guidance in the important processes of the approach to the patient, interviewing techniques and history taking.

History taking is the first contact of the student with the patient and relatives. To obtain a good history involves the development of a good relationship with the patient and relatives. From this point of view, therefore, this course affords instruction and practice in basic psychiatry, not separated and compartmentalized but closely integrated with medicine.

History taking has several aspects which are pointed out. It is not just a question and answer procedure, but comprises the following:

(1) *Information.* Information is gathered concerning the chief complaints, the development of the present illness and the past medical history. It also should include the pa-

tient's attitude toward the illness, his emotional reaction to it and speculation as to how this will influence the course of the illness and convalescence. This will involve some knowledge of the patient's personal and emotional background, his temperament, personality and important experiences in his life. The family's attitude toward the illness is important and also the effect of the illness on the family. Information on the family background is important, including economic, social and cultural factors, as well as a working knowledge of family relationships.

(2) *Observation of the patient.* Emphasis is given to the observation of the patient's nonverbal behavior, his restraint of tension, expression of worry, sadness, anger, the patient's neglect of his appearance, immodesty or excessive modesty.

(3) *Interviewing.* The attitudes of the interviewer are important in influencing the positive, giving responsiveness of the patient or in eliciting disappointment, irritation, negativism or withdrawal by the patient.

(4) *Communication.* The ability to ask questions effectively, not brusquely, impersonally and irritably is discussed. The importance of nonverbal attitudes and behavior is pointed out. Practice in effective ways of eliciting positive responses and relevant information is afforded and discussed. Communication is a two-way process involving not only the intellectual and verbal aspects of doctor and patient but also emo-

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tional and personal attitudes. Conclusions are drawn from information reported in history taking and from observations noted as to the patient's and relatives' emotional responses and attitudes—their anxieties, irritations, reticence, worries, depression, distrusts, hopes, ambitions and frustrations.

(5) *Interpretation of data from all sources.*

(6) *Organization of all material obtained is made emphasizing important aspects for diagnosis and treatment, indicating that a comprehensive review has been made, and including briefly information that is negative or not relevant to this particular condition or situation.*

Awareness of and practice in these various elements of history taking will enable the student to become a better doctor and avoid mistakes as a result of hasty and superficial methods of acquiring significant data.

#### **Psychiatric Program**

In the development of the psychiatric part of the program two aspects immediately appear to be important: first, placing of the course in the second year of the medical curriculum and second, selection of patients from the wards, persons hospitalized for nonpsychiatric illnesses. Thus the teaching of psychiatry is given a broad, comprehensive medical basis. It is not compartmentalized. Psychiatry is introduced early to the medical student as a basic part of medicine, not as a specialty and not emphasizing psychopathology nor the study of psychiatric disease entities.

Before the student becomes fully engrossed in his study of disease entities and pathology of bodily systems, his human interest in people is rekindled. He can, in this course,

acquire a degree of confidence in talking with patients. He can learn that talking with patients carries with it constructive or destructive therapeutic implications. He can discover that he is of value to the patient and grow in effectiveness in his relationship with patients. He has the opportunity also to think creatively about the patient as a person, about the potentials in his personality and environment rather than to think of him merely as a case with a list of symptoms. He can also learn that other factors besides bacteria, tumors or degenerative disease modify the patient's feelings, his sense of security and perhaps the course of the disease. He can discover what motivations and inhibitions govern a patient in health and illness, and how the patient's illness may modify these factors in personality organization.

Up to this point in the student's medical education, the curriculum usually has focussed on the structure and functions of parts of the body, the products of the organism and the function of the integrated physical organism. This course is the student's first intensive official exposure to the patient, the individual as a whole.\* It is also the first opportunity for the student to examine his own emotional reactions, to reflect on himself as a person with feelings in response to the patient and to realize the importance and effect of his feelings and reactions on the patient.

Thus far the student's relationship with the instructor in the required curriculum in many cases could be characterized as distant, impersonal and even anonymous. In large lecture groups he has been presented material in an authoritative manner. He

\*The family advisor course, with somewhat similar aims and covering all four years, is an elective course.

### *The Psychiatric Social Worker in Group Process Teaching*

has been "lectured at." His lot was largely to understand and memorize what the textbooks and the professor said. In contrast, this course aimed at giving the student only a minimum amount of information for understanding. Through experience in the group process and experience with the patient, it was expected that the student would develop understanding and knowledge.

Most of the students are bound to have some anxiety which is not derived alone from lack of knowledge. Many other sources of it include inexperience, stress of new situations, responsibility regarding illness, possibility of making mistakes, ego threat of ineffective performance, uncertainty of patient's response to the student, his own temperament and "fund" of self-confidence, timidity, reserve or even hostilities, his attitudes toward instructors, father figures, authority (transference), medical school and hospital experience. Aloofness, irritability, aggressiveness, dislikes, protectiveness or relative nonparticipation have a basis in the student's feelings. This anxiety is a positive thing and can be dealt with constructively in this course.

#### **Mechanics of Course**

The mechanics of the course were as follows. A section of 12 students met with the psychiatrist and psychiatric social worker for 18 hours. This total number of hours was divided into six three-hour sessions distributed over a period of three weeks. There were nine sections of students throughout the year, and each section was led by a different psychiatrist. The psychiatric social worker remained the only constant figure throughout the year. All the psychiatrists had a common psychiatric frame of reference in spite of individual variations in teaching method.

In the first, third and fifth meetings of the individual sections, the psychiatrist interviewed a patient in the presence of the group. The psychiatric social worker participated in the interview when indicated to bring out details concerning the patient's social milieu. In the second, fourth and sixth meetings, students in groups of two conducted their own interviews, the psychiatrist sitting in on part of each interview. At each meeting sufficient time was held available for discussion.

In spite of advance planning and discussion, all those involved in the teaching were feeling their way and exploring more effective teaching methods. Like the role of the psychiatrist, that of the psychiatric social worker became more clear as the course developed. The psychiatric social worker\* performed various functions in this first experimental year. The worker participated in the planning of the course. She had an important place in its administration. She provided a sense of continuity which afforded opportunities to make observations of importance educationally. She discussed with the new instructors the reactions of the previous groups and the group experience as a whole up to that time. During the seminars, the worker participated with the psychiatrist in the demonstration interview of the patient. In the seminar discussion of the interview, there was active participation in the discussion from several points of view. One was to bring to consideration the importance of the environment and the effects of the environment in the particular patient. Another was to stimulate and

\*Margaret M. Heyman, associate in psychiatric social work, was the organizing and participating psychiatric social worker during the year 1951-52.

catalyze group discussion. This activity grew out of the worker's observation of the reactions of the students individually and as a group to themselves and to the psychiatrist. Following each seminar, these observations of the session were brought to the conference with the psychiatrist. In addition, during the seminars, the worker observed the effect of the individual psychiatrist's approach on the group. In conference with the psychiatrist, the worker helped to evaluate his method in the light of her experience with other groups and with previous sessions of his group. Individual discussion as well as conference with the whole group of instructors implemented the important role of the worker in analyzing and correlating the inevitably diverse approaches of the instructors.

Regardless of the different approaches of the individual instructors, it was observed that all groups at some time or other had anxiety in and about the discussion. This was shown in varying amounts and in different ways. Within each group certain students stood out as having more anxiety than others. The students' most rational and most easily verbalized concern was around their lack of medical knowledge and experience. Significantly, it was confined to the early sessions of each group, before students had interviewed a patient or before their second interview with a patient.

The area of finances was often the spot where anxiety easily came out. In one group, when the discussion touched on the subject of fee setting, the students suggested many ingenious methods for establishing a patient's ability to pay. Not one student offered the possibility of direct discussion of economic resources with the patient himself. When the instructor brought up this method for

fee setting, there were immediate and strong objections on the basis that such questioning violated the patient's private life.

Common to all sections was an ambivalent response to this experience in a small group. In contrast to the large lecture group or even the smaller laboratory group, students were encouraged to speak out informally concerning their reactions and feelings on the matters under discussion. A few students resisted in a passive fashion — remaining silent throughout or absenting themselves. The greater number, however, expressed themselves negatively about the approach in the early sessions only, joining in as participating members of the group in due course of time. In the beginning some asked directly for a more didactic approach. Some complained that they were not told what attitude to take in interviewing. Others in some groups found fault with early sessions as being "too speculative." The instructor was "making mountains out of molehills" in his discussion. They challenged the instructor with such remarks as, "You can't cut it," "You can't show it at postmortem." Here students are dealing with emotional rather than organic pathology.

Some students in every group were suspicious of the dynamic approach suggested for understanding patients. They preferred to relegate such an approach to the psychiatrist in his psychiatric interview rather than to see it as part of a comprehensive medical approach applicable to them as general practitioners or other medical specialists. There would not be enough time for them to listen to the patient in this way. Furthermore, it often seemed to the student that the psychiatrist was a kind of detective, always looking for something abnormal, probing and somehow interfer-

### *The Psychiatric Social Worker in Group Process Teaching*

ing with the patient and making him uncomfortable. It was none of the doctor's business to inquire about the family. It was a violation of the patient's privacy to ask about the economic resources for this illness. Generally speaking, such attitudes gradually disappeared as the student experienced some success in interviewing his own patients and as he understood the relevance of such information.

It was apparent that considerable feeling was evident in those students who remained silent and in those who absented themselves after certain anxiety-producing discussions, or when they themselves would have the opportunity to interview patients. Some made sarcastic jibes at the instructor; others commented jokingly to their neighbors.

One of the important roles of the worker was to help establish the instructor in the students' eyes as a person of experience with a permissive, nonauthoritarian attitude who accepted individual expression of feeling and reactions. Indirectly in this role the worker also was interpreting to the student some of the attitudes essential to his development as an effective physician. In the group this was accomplished in several ways, taking care not to shut off expression, but rather to spark and stimulate it.

For instance, the instructor had just interviewed Patient D, a very assured foreman who volunteered during the session only that he supervises 100 men and is an excellent student of psychology. He actively resisted the instructor's attempts to learn much more from him than his physical symptoms although he related these in great detail. The instructor did learn, however, that the patient's mother was alive and that

his father was dead. The instructor, apparently not hearing this response, questioned the patient about both parents' current health. The patient reacted with some irritation. In discussing the interview, most of the students were quick to see that this patient had resisted revealing himself as a person. The worker wondered if the instructor had some feeling about this particular patient and cited his lapse of memory related to the patient's response about his parents. The instructor was free to admit he had not heard this response and several students corroborated worker's statement of what patient had said. This very easily led into a discussion of the reaction of the interviewer to the interviewee, how one's reactions to something about the patient may cause blind spots in the interview. The instructor admitted that he had not felt warmly to this patient's bragging manner. Various students followed with their own and varying responses to this patient. A lively discussion ensued with no further "sparking" needed from the worker. This example illustrates the worker's attempt to aid in creating an atmosphere in which the instructor could be questioned, in which there was a willingness to share thoughts and feelings in the quest for a comprehensive understanding of the patient. In such an atmosphere the student could question vigorously and disagree with the authoritative figure of the instructor, and in some instances even express antagonism to him without reproach and with group support.

However, for the worker to be able to respond in the spontaneous way in the session as described in the above example depended to large degree on how the individual instructor saw his role with the group.

Instructor W's approach was benignly didactic. Very little anxiety was shown in his group because he gave his answers to questions raised in a conscious effort to keep expression of feelings at a minimum. He presented to the students blocks of pertinent psychiatric material rather than allowing this material to develop out of the discussion of the individual patient interviewed. In this situation most of the worker's activity was confined to observing the students' reactions to this approach. It was found that her verbalizations in this group lacked spontaneity. Because this approach anticipated passive acceptance from the students, the worker could find no real place to participate along the lines of stimulating free group expression.

The same was true of the worker's role in Instructor X's group. In contrast to Instructor W, however, an aggressive attempt was made toward student participation by calling on individuals to speak about their feelings and reactions. Too much anxiety was aroused with this method, and absenteeism among the students was prevalent.

The goals of the course were most closely met with those instructors whose method was nonauthoritative, nondidactic and permissive. With this permissiveness, however, an active ingredient of encouragement of spontaneity was important. Thus, spontaneity bred spontaneity and helped to discharge the group's anxiety.

Instructor Y was nonauthoritative, nondidactic and permissive, but difficulty arose in the beginning in his group with the delay in allowing students to interview their own patients, usually planned for the second meeting. In this section it was not until the fourth meeting that students interviewed patients for themselves.

Because realistically they had felt no responsibility for any patient up to that point, all their anxiety was focussed on the instructor—on the authoritarian person he appeared to be in their eyes. They openly expressed antagonism to him in the third meeting. He had, with reason, described the patient just interviewed as placing all responsibility on the doctors, in an effort to show one facet of a very dependent personality. A number of students sharply remonstrated with the instructor for assuming too much on insufficient evidence. Apparently to overcompensate for their lack of medical knowledge of the significance of personality types in disease, the students protested that the patient should put himself in the doctor's hands. Here was an opportunity to discuss this patient's habitual reactions of dependency and the fact that if the doctor does not recognize this tendency he may stimulate the development of neurosis in the patient. Here also was discussed the importance of the doctor's recognition of what he does to a patient whose primary needs are to develop aggressiveness when he takes away initiative and responsibility from the patient. During all of this, in no way did the worker defend the instructor's point of view and procedures. At the next meeting, finally interviewing their own patients, the students were reassured by the experience of talking with a patient and their ability to elicit a positive response. They had secured information from their patients and also had given them something. Their anxiety was dissipated to a large extent. In this and subsequent discussions spontaneity in this group was increased because the students' anxiety was not arising solely out of their relationship with the instructor. There was

### *The Psychiatric Social Worker in Group Process Teaching*

now a realistic basis for the spontaneity in their relationship with the patient. The patient's relationship with the student was soon seen and felt not to be as threatening to the student's confidence and capacities as had been anticipated.

Subsequent instructors avoided the unnecessary anxiety created by delayed interviewing by students. Where their approach was nondidactic and nonauthoritative and encouraged spontaneity, the psychiatric social worker's activity, as illustrated with Patient D above, seemed to cement the instructor's approach and render it less threatening for the students. Spontaneously, students brought in their own experiences and reactions and freely questioned the instructor and each other. This seemed to be the optimum milieu for the cooperative exploration and discovery which is learning and education.

#### **Summary**

In summary, that portion of a new course allotted to the department of psychiatry at the University of Pennsylvania School of Medicine has been described. It has appeared that the students' anxiety in this course needs careful consideration.

The importance, value and contribution of the psychiatric social worker in this course has been brought out. Her role in the planning, organization, administration, execution and continuity of the course has been mentioned. Particular emphasis was given to the worker's observation of group phenomena, how and where anxiety displayed itself, the different effects of anxiety in the group, the varying teaching methods of the different instructors, the reactions of the students to them and the effectiveness in teaching. The

worker brings these observations to the instructor for discussion in terms of the information itself, the expression of feelings, and suggestions for future procedure. All of this enhances the effectiveness of the instructors.

The experience in this course brought to our attention the importance of how the worker stimulates freer group expression, how spontaneous expression of feeling and ideas and group discussion and the development of group "spirit" are stimulated, how resistances in the form of nonparticipation, irritation and aggressiveness are overcome, how all of this tends to mobilize the activity for which this course exists and sets it in motion.

The psychiatric social worker has most success in teaching when teamed with instructors whose method is permissive, nondidactic, nonauthoritative and aimed at providing spontaneity in the group. The instructor's personality is important also; his expressiveness, confidence, friendliness and lack of anxiety, haste, dogmatism, authoritarianism and compulsiveness are as essential in this course as his fund of knowledge. And finally, the individual conference between psychiatric social worker and student at times seems to be helpful.

In this course, which is not designed as therapy for either the students or the patients, the students nevertheless have the opportunity to see in operation various phenomena and processes which are important in relationships between people. These phenomena and processes are obviously important not only in actual therapy but also as we have seen here in an early course in medicine in facilitating history taking and relationships with patients.

## *Editorials and Comments*

### **Progress in the Distribution of Physicians**

MEDICAL EDUCATORS ARE fully aware of the fact that physicians must not only be well trained but also must be well distributed if modern medicine is to make its maximum contribution to the health of our population. It is therefore very encouraging to find that the preliminary report of a study long in progress<sup>1</sup> reveals that the distribution of physicians in this country is actually very good.

Earlier studies such as that reported in 1924 by Mayers and Harrison<sup>2</sup> indicated that the ratio of physicians to population tended to be as low as one physician to 536 persons in cities of more than 100,000, and as high as one physician to 1,238 persons in populations in and about communities of less than 1,000 persons.

Dr. Dickinson's study<sup>1</sup> involves dividing the country up into its chief trading areas and studying the needs of each trading area for physicians' services. He found, interestingly enough, 757 such trading areas as contrasted with something like 3,070 counties and 1,200 local public health units as recommended by the American Public Health Association's Committee on Administrative Practice.<sup>3</sup> He found: that 100 per cent of towns with a population of more than 5,000 had at least one physician in active practice; 96 per cent of towns with a population between 2,500 and 5,000 had at least one physician in active practice; 88.3 per cent of towns with a population between 1,000 and 2,500, and 21 per cent of towns with a population between 100 and 1,000 had at least one physician in active practice. According to his studies, only one-sixth of 1 per cent of the population lives outside a 25-mile radius of the homesite of a physician in active practice.

This study is very reassuring, but it would certainly not justify any relaxing of our efforts to stimulate and facilitate the settlement of young medical graduates in rural areas. Our medical schools must continue to highlight the urgent needs of the rural communities and endeavor where possible to provide their students with some preceptorship experience with a rural practitioner. The organized profession must continue to collect and make readily available accurate information as to where deaths and retirements make young physicians badly needed.

Medical colleges may work to real advantage with local communities that feel they need a physician but don't know how they can go about attracting and holding one.<sup>4</sup> Whether the medical education scholarship-loan programs in the eight states currently sponsoring them will actually result in permanently settling more physicians in rural areas is still to be determined, but the facts in the case should shortly begin to become available. Modern development including the automobile, good roads, the telephone, snow removal machinery, rural hospitals aided by Hill-Burton grants, postgraduate medical education programs and group prac-

tice certainly make a rural practice less isolated and much more attractive in every way. Let us be thankful they are operating to the advantage of improved physician distribution too.—D.F.S.

1. DICKINSON, FRANK G.: "How Bad Is the Distribution of Physicians," *J.A.M.A.*, Vol. 154, p. 1209, April 3, 1954.
2. MAYERS, L. and HARRISON, L. V.: "The Distribution of Physicians in the United States." General Education Board, 61 Broadway, New York, 1924.
3. EMERSON, HAVEN: "Local Health Units for the Nation." The Commonwealth Fund, New York, 1945.
4. MURPHY, FRANKLIN: "Medical Care in Rural Kansas—The Problems and Its Proposed Solution." University of Kansas School of Medicine, 1950.

## What's in a Teacher?

**A**N EFFECTIVE TEACHER is synthesized from equal amounts of knowledge of his subject and of the ability to transmit. Thomas Francis Maher<sup>1, 2</sup> has considered some of the points which relate to ability to transmit and his incisive comments are worthy advice to medical educators.

Maher's points divide into two groups: (1) attributes of the effective teacher—positive factors and (2) obstacles to effective teaching—negative factors.

*A few of the attributes of an effective teacher include:*

**Vitality:** "No one who lacks interest is receptive to learning . . . . education is salesmanship to willing customers . . . . In a word where interest wanes, learning never starts."

**Clarity:** "Students do not come to college to be impressed . . . . The lecture should definitely be adapted to the education level of the class . . . . There is very little in the catalogue of human knowledge, no matter how abstract it may be, that cannot be clarified by illustration, analogy or specific application. *Repetitio est mater studiorum.*"

**Visual Instruction:** "At the mention of visual aids, the average instructor thinks of himself as the spirited voice in the dark as the slides parade before his class . . . . The spotless blackboard is the oldest visual aid of all—Visual aids can become a form of window dressing to hide a lack of knowledge and assurance."

**Provocation:** "Do our finished products have in them the luster of forged and beaten steel or the brittleness of poured cast iron? We only find truth after struggle and mental turmoil."

**Questioning:** "The proper use of questioning can be a teacher's most effective technique. Questions should be well stated . . . . If a question is directed to the entire class, alertness will be sustained."

**Assurance:** "When an instructor steps before a class, he has every reason to and does believe that he is the master of the room . . . . Intellectual respect must be commanded at all costs even in retreat, not in the arrogance of a demagogue but in the humility of a scholar."

**Teaching Environment:** "The administration usually sets the stage for equipment and surroundings . . . when drowsiness appears to overtake the class, it may be due to poor ventilation, inadequate lighting, noise in a corridor or in a nearby classroom."

**The Personal Touch:** "When a class is recognized as a group of living, breathing persons and not as an impersonal audience, we can expect

things to happen intellectually . . . . to know the student is to understand the reason for his doubts, failures and triumphs."

*Obstacles to effective teaching include:*

*Appearance:* "Classes do not assemble for a spectacle either from *Esquire*, the *Hobo News* or *Dickens*." (The white coat may be the golden mean of the medical school teacher.) . . . "The attention of the class should be directed to the teacher and his pearls of wisdom and not to the garishness of his necktie, the misfit of his clothing, the color of his shirts or the absence of his haircut."

*Vocal Expression:* "In this matter there are several aspects that must be considered: quality, volume, speed, pause and enunciation . . . There is no substitute for good speech—unless it be silence. Classroom distractions are sufficiently plentiful without manufacturing more."

*Mannerisms:* "The class can be interested in but one thing at one time and that cannot be a side attraction. The space gazer, the doodler and the contortionist are not members of the teaching profession. The true objective is to make the subject itself keep the class on edge."

*Arrogance:* "Learning is not a contest of wits to be played with slurs and snide remarks . . . it is rather the patient leading of hungry minds from fact to fact and truth to truth. To hinder the desire to learn through fear and abuse is certainly no credit to the high art of teaching."

In the advancement of medical education, effective teaching should stand ahead of research, publication and general excellence of scholarship.—J.Z.B.

1. MAHER, T. F.: "Gilt for the Lily" *Bull. Amer. Assoc. Univ. Prof.* 34, 382, 1948.  
2. Editorial, *Jour. Chem. Ed.* 26, 1, 1949

## Medical Schools and Base Hospital Units

IN WORLD WARS I AND II it was a commonly accepted practice to recruit a base hospital unit in a medical school and plan on calling it out as a unit if and when the need arose. The military advantage of such an arrangement was obvious: it made available on short notice a well balanced, already constituted medical, surgical and specialist staff who were known to be competent and were accustomed to working together. The fine records made by many of these units attest to the general wisdom of that type of organization at that time in history.

In the planning for medical education in a possible third World War, a number of basic developments would appear to make it necessary to re-evaluate this whole principle of recruiting base hospital units from medical college staffs. In World War III the industrial population at home may be expected to suffer as much attrition as the forces in uniform; will it be wise then to deprive our medical centers of their clinical staffs that will be so badly needed to care for bombing casualties and keep our industrial manpower in productive activity? In World War III atom bombing will result in such numbers of casualties that there will be urgent need for greatly increased numbers of doctors; will it be wise to take from any medical school any basic science teacher or physician who is making an important contribution to the turning out of new

doctors? In World War III keeping ahead in medical research may well be as important as keeping ahead in the development of new weapons; will it be wise to take our clinicians from their laboratories and their clinical research facilities and send them out to a base hospital with no facilities for investigation? In World War III if there is one thing we will have it will be air transportation; will it still be necessary to bring the base hospitals to the patients? Will it not be more practical to fly out the patients requiring specialized or prolonged treatment, making every medical center in the country, in fact, a base hospital?

If medical school faculties are to be permitted to make their greatest contribution in any future war, they must continue to have available the hospital and laboratory facilities and the technical assistance they find so essential to a program of teaching, research and community service. And the staff must be left essentially intact. Some of the younger men can, without hazarding the three fold program of the school, be spared for military field service for periods up to two years, and by careful planning some of the older men may be alternated for shorter periods of field duty. But the day when it was wise to pull a complete base hospital staff out of a single medical school is, in the opinion of the author, over—D.F.S.

## Our Readers Write

### **Do We Need to Recruit Candidates for Medicine?**

*To the Editor:*

THOSE OF US who have taught medical students for many years were surprised and delighted at the attitude of the returned veterans of World War II. They were mature, serious, hard working and very appreciative of all that was done for them. In every way they were satisfactory and it was a pleasure to teach them.

With the departure of the veterans, we have been rather disappointed in more recent candidates. It also appears that fewer college students are applying for entrance into the medical schools of our country. Will this lead to a lowering of the quality of our future graduates? Is good ma-

terial for medicine going into other activities or unable to attend our schools?

In considering these questions let us examine first what factors lead young people into the profession of medicine, and second what influences are luring good material away or preventing them from applying. Below, I am listing nine reasons for and nine reasons against, which may enter into a student's decision. Completeness is not claimed for these lists, but they may help us to think about the problem and possible solutions.

*A partial list of why students choose medicine as a profession:*

1. To make a good income in an ancient and respected profession.
2. To enter an interesting field of

work where problems must constantly be solved and where scientific methods must be applied in the solution.

3. To be a leader in his community, to be looked up to, often to rise above the social level in which he was reared.

4. To help his fellowmen, relieve suffering and do good to mankind.

5. To be in a learned profession where constant study is essential.

6. To be in a private enterprise where his own initiative and efforts will largely determine his success.

7. To aspire to prominence in research.

8. To follow a family tradition especially if the father was a physician.

9. To further a religious movement by becoming a medical missionary.

*A partial list of reasons why acceptable candidates are not applying for entrance:*

1. They are unwilling to do as much work as the strenuous curriculum of the medical school demands.

2. They prefer to enter the fields of engineering, chemistry or physics if scientifically minded. In this great age of technical advances their efforts are sure to be sought and rewarded.

3. They are attracted by the large industries which vie with one another for the best college students and pay them well at the start.

4. They wish to marry early and rear families, a practice now prevalent among our young people. In doing this they don't want to go into

debt or require their wives to earn money as is so often the case when the husband is a medical student.

5. They may overemphasize the material things in life to the detriment of the desire to be humanitarians.

6. They may lack the financial means or the possibility of borrowing money or receiving a scholarship to study medicine.

7. They may be unable to attend the school of their choice or any school because of geographical restrictions of the schools or other restrictions such as those of race, color or religion.

8. They may be turned from medicine by the adverse publicity given the profession by advocates of governmental control.

9. They may fear that excessive requirements of the military and the government may in the future restrict their freedom and initiative.

In contemplating the problems involved there is one thing that can be done and that is in the matter of students with inadequate financial backing. Loan funds and scholarships should be available to every candidate who has demonstrated his fitness mentally and morally to enter the profession of medicine. If outstanding athletes in preparatory schools can get scholarships in our universities, it is only proper and fitting that excellent premedical and medical students should be aided in their careers.—S. I. KORNHAUSER, professor of anatomy, University of Louisville School of Medicine.

## NEWS DIGEST

### **Runyon Fund Grants**

The Harlem Hospital, New York City, and the University of Minnesota were awarded Damon Runyon Fund grants for the fourth consecutive year. Harlem Hospital was awarded \$10,000 to continue tissue culture investigations of human relations, which is under the direction of Dr. Jane C. Wright.

At Minnesota, Dr. Owen H. Wan-  
gensteen, director of the second-  
look operation for patients with  
gastric colic or rectal cancer, will  
further his studies with the aid of a  
\$15,000 grant.

### **Lederle Medical Awards**

Fourteen awards, ranging from one to three years, have been presented by the Lederle Laboratories Division, American Cyanamid Company, for the year 1954. The Lederle Medical Faculty Awards are intended to strengthen the preclinical departments of medical schools in the United States and Canada by contributing to the support of the research and teaching activities of department members who have shown high performance but are not yet permanent faculty members.

The Lederle Laboratories have also made available the Lederle Medical Student Research Fellowships, to be used for summer vacation research. The amount will not exceed \$600 per year for any individual and students applying must have good scholastic standing and the consent of the faculty member under whose supervision their research is to be conducted.

### **Growth Hormone Symposium**

A three-day international symposium on the hypophyseal growth hormone, its nature and actions, is being sponsored by the Henry Ford Hospital and the Edsel B. Ford Institute for Medical Research. The symposium will be held at the Henry Ford Hospital, October 27-29. Those interested should write the program committee, Henry Ford Hospital, Detroit 2, Mich.

### **Proctology Awards**

The International Academy of Proctology has announced its annual cash prize and certificate of merit award contest for 1954-55. The best unpublished contribution on proctology or allied subjects, in the opinion of the judges, will be awarded \$100 and a certificate of merit. All entries are limited to 5,000 words, must be typewritten in English and submitted in five copies. Deadline for entries is February 1, 1955. The competition is open to all physicians in all countries, whether or not affiliated with the academy. Entries should be addressed to: International Academy of Proctology, 43-55 Kissena Blvd., Flushing, N. Y.

### **Urological Association**

The 49th annual meeting of the American Urological Association is scheduled to be held at the Waldorf-Astoria Hotel, New York, May 31-June 3. The meeting will include scientific and technical exhibits, motion pictures and essay competition, as well as scientific reports to be

delivered by members of the association. One of the features of the meeting will be the Guiteras lecture, to be delivered this year by Dr. John Eager Howard.

#### **"Better Laboratory Planning"**

A revised edition of "Better Laboratory Planning," a booklet published by the Scientific Apparatus Makers Association, has been made available.

This pamphlet includes pictures of laboratories in colleges, industries, hospitals, secondary schools and research facilities. A special section of the book is devoted to recommended bidding practices. Copies of this manual may be obtained free of charge from the Laboratory Equipment Section, Scientific Apparatus Makers Association, 20 N. Wacker Drive, Chicago 6.

#### **National Health Council**

The National Health Council has released its annual report, announcing an all-time high in membership and plans for continuing its services to health organizations. The highlight of the past year was the National Health Forum, held in New York on March 24-26, around a theme of "Changing Factors in Staffing America's Health Services."

#### **Tobacco Research**

The Tobacco Industry Research

Committee has invited university, hospital and other medical research organizations throughout the nation to submit proposals for specific cancer research projects for consideration by the committee's scientific advisory board. An initial fund of \$500,000 for research has been appropriated by the committee, which is composed of major cigarette manufacturers, tobacco growers and warehousemen.

#### **World Health Assembly**

The Seventh World Health Assembly, attended by delegations from over 70 countries, recently concluded its three-week session in Geneva, under the chairmanship of Dr. Joseph Togba, director-general of the National Health Service of Liberia.

The assembly raised the regular budget of the World Health Organization by \$1 million to \$9,500,000 to be spent in 1955. It was decided that \$5 million of this budget would be spent on advisory services to governments to help them combat communicable diseases, stimulate programs for the general promotion of health, and train medical and auxiliary personnel.

Next year's session will be held in Mexico. Except for the second assembly which was held in Rome in 1949, all meetings of the world health body have been held at Geneva.

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## **College Briefs**

#### **University of Cincinnati**

Retiring at his own request after 41 years of service in the department of surgery, Dr. L. HOWARD SCHRIVER was honored at a testimonial dinner recently by his friends and associates. Dr. Schriver joined the faculty in 1913, and since that time has taught more than 3,000 students. He

is also a former president of the Ohio State Medical Association.

#### **Dalhousie**

Dr. CHESTER BRYANT STEWART has assumed his duties as dean of medicine. He was to have succeeded Dr. H. G. GRANT on June 1, but Dr. Grant's death early in May moved

the date of his appointment forward. Dr. Stewart was formerly professor of epidemiology.

#### Duke

Dr. SUSAN C. DEES and Dr. JAY M. ARENA, associate professors of pediatrics, have been elected members of the American Pediatrics Society.

#### Emory

The school of nursing has received a grant of \$10,350 from the Commonwealth Fund to be used in setting up a graduate program in nursing. The program will offer a one-year course leading to the degree of master of nursing. The first students will be admitted in the fall of 1955. MARY MARGARET WILLIAMS has been named director. The grant will be used for student fellowships and for seminar expenses in the 1954-55 academic year.

#### Georgetown

Dr. THOMAS F. KELIHER, clinical associate professor of medicine at the medical center, received the Bene Merenti Medal at the university's 155th annual commencement on June 7. The medal is awarded annually in recognition of outstanding service to the school.

#### George Washington

A \$52,624 Public Health Service grant has been awarded to the university for use in expanding its cancer research program.

The funds will be used for clinical and laboratory studies dealing with the development and use of new drugs for treating cancer, with initial emphasis on lymphoma and leukemia. Dr. LOUIS K. ALPERT, who has recently been appointed clinical professor of medicine, will direct the new research program. Dr. PAUL K. SMITH, professor of pharmacology, will be in charge of the pharmacological and chemical aspects of the program.

Five second-year students have

been awarded student fellowships by the National Foundation for Infantile Paralysis. The fellowships are for the current summer and are designed to help the students determine their abilities and aptitudes.

#### Harvard

Dr. STANLEY COBB will retire this summer as Bullard professor of neuropathology at the medical school, and as chief of psychiatry service at the Massachusetts General Hospital.

Dr. Cobb joined the faculty in 1919. He is a former president of both the American Neurological Association and the American Association of Neuropathologists, and is now president-elect of the American Psychosomatic Society.

#### Illinois

The awarding of 14 fellowships for graduate work has been announced. Dr. PETER H. DICKINSON, who holds a fellowship in the Royal College of Surgeons, has been awarded an \$1,800 grant for a 12-month period. A \$1,200 fellowship for a year of graduate study has been awarded to ANN HUNSAKER. This is the first time a fellowship has been given to a student holding only a bachelor's degree; previously only professional graduates and those with master's degrees were eligible.

In addition, 12 summer fellowships were awarded to students. Fellowship appointees are exempted from tuition fees.

The Public Health Service has awarded two grants, totaling \$15,362, for research projects. A \$12,500 grant will continue to support the teaching program in the field of cancer at the tumor clinic. Dr. DANIEL P. SLAUGHTER will direct the program.

The department of anatomy has received \$2,862 for continuance of the electron microscopic study of the glomerulus, especially its basement membrane in normal and nephritic mice. The investigation will be conducted by Dr. ARTHUR KIRSCHBAUM and Dr. PARKE H. SIMER.

### Louisiana

Dr. EDGAR HULL, professor and head of the department of medicine, has been appointed associate dean. He will retain his title as professor of medicine and is succeeded as head of the department by Dr. WALTON R. AKENHEAD, who has been named professor.

Dr. THOMAS W. RICHARDS, associate professor of neuropsychiatry, was elected president of the Louisiana Psychological Association at its recent meeting.

Dr. RUSSELL L. HOLMAN, professor and head of the department of pathology, was elected president of the American Society of Experimental Pathology at the annual meeting of the Federation of American Societies for Experimental Biology.

Dr. MILTON L. McCALL, professor and head of the department of obstetrics and gynecology, and Dr. HOWARD J. TATUM, associate professor, will read papers at the International Congress of Obstetrics and Gynecology at Geneva, Switzerland, July 26-31. Dr. Tatum recently received a renewal grant of \$37,500 from the Schlieder Foundation of New Orleans to continue his research on the underlying biochemical and physiological abnormalities associated with toxemias of pregnancy.

### Jefferson

Dr. JOHN H. GIBBON JR., professor of surgery and director of surgical research, was recently elected president of the American Surgical Association at its annual meeting in Cleveland. Dr. Gibbon also received the John Scott award, made by the board of city trusts of Philadelphia.

### Maryland

Col. WILLIAM S. STONE has been appointed director of education and research, effective July 1. Other appointments which became effective simultaneously are Dr. THEODORE E. WOODWARD, professor and head of the department of medicine; Dr. MAURICE C. PINCOFFS, head of the

new department of preventive medicine, and Dr. CHARLES VAN BUSKIRK, professor and head of the division of neurology.

Grants for research from the Frank C. Bressler Reserve Fund, totaling \$40,312.84 were approved by the advisory committee of the faculty to support new research and work now in progress in the medical school.

Dr. ROBERT G. GRENNELL, assistant professor of psychiatric research, received three grants totaling \$103,389. These grants came from the Air Research Development for research and reports on intraneuronal chemical changes in anoxia; from the Public Health Service to study the effect of low oxygen on cerebral metabolism and function and from the office of naval research for work on the effects of anoxia and related physiological states on neuronal structure and function.

Dr. ENOCH CALLAWAY JR., instructor in psychiatry, received a research career grant of \$75,600 from the Public Health Service for the continuation of training and research on the relation between autonomic activity and human behavior.

Dr. RUSSELL S. FISHER, professor and head of the department of legal medicine, received a grant of \$24,465 for studies of morphological effects of chemicals and mechanical trauma on the nervous system.

### Medical Evangelists

The department of entomology of the school of tropical and preventive medicine has received a grant of \$10,000 from the Army for a study of control of plague vectors under field conditions. This brings the total research funds granted to the insecticide research to \$86,400. RAYMOND RYCKMAN is director of the project.

The United Cerebral Palsy Association of Los Angeles County has renewed grants to the pediatrics department totaling \$31,000. The funds will cover the cerebral palsy pre-nursery school and cerebral palsy counseling service. Dr. ROBERT CHINNOCK, associate professor of pediat-

ries, will be in charge of the funds.

Dr. ROGER W. BARNES, professor of urology, recently returned from a five-month, round-the-world tour of medical institutions operated by the Seventh Day Adventist church. Dr. Barnes demonstrated urological and surgical techniques during his visits to hospitals in Bolivia, Iraq, India, Japan, Korea and Australia.

### **Missouri**

Dr. JOSEPH E. FLYNN, formerly associate professor of pathology at the Columbia University College of Physicians and Surgeons, has been appointed professor and chairman of the department of pathology. He replaced Dr. M. PINSON NEAL as chairman of the department. Dr. Neal will continue as professor of pathology.

### **NYU**

A grant of \$500,000 from the Murry and Leonie Guggenheim Foundation will be used to establish an institute of dental research as part of the college of dentistry. The institute will be located in a seven-story building owned by the university at 339 E. 25th St., which will be vacated by the state health department this summer.

Dr. ALFRED KESTENBAUM, a faculty member of the New York University—Bellevue Medical Center's post-graduate medical school, represented the United States at the 19th International Congress of Oto-Neuro-Ophthalmology in Sao Paulo, Brazil, in June.

### **North Dakota**

Dr. GEORGE W. STARCHER has succeeded Dr. JOHN C. WEST as president of the university. Dr. Starcher was formerly dean of the college of arts and sciences at Ohio University. He received his A.B. degree from Ohio University, and his A.M. and Ph.D. degrees from the University of Illinois.

### **Oberlin**

A four-man research team is be-

ginning a study on the preparation for medical education in a liberal arts college, supported by a grant of \$5,500 from the Commonwealth Fund of New York.

The research team will visit 25 medical schools where Oberlin graduates have studied in the past decade, to compare the experiences of students in medical schools as they relate to their undergraduate programs. The team will consist of WILLIAM B. RENFROW, professor of chemistry, WARREN F. WALKER, professor of zoology, W. BLAIR STEWART, dean of the college of arts and sciences, and ROBERT E. DIXON, assistant dean.

### **Oregon**

The National Foundation for Infantile Paralysis issued a grant of \$28,593 to the medical school late in April to support the serological tests connected with the Salk polio vaccine field trials in Oregon and Idaho.

Dr. ARTHUR W. FRISCH, professor of bacteriology, and four assistants will work during the next several months to determine the antibody count in the blood samples of children before and after vaccination. The bacteriology department also will run special blood tests on, and isolate viruses from any vaccinated children who may contract polio this summer, and will make similar tests on members of the children's families.

Dr. ARTHUR J. SEAMAN, associate professor of experimental medicine, has been awarded a Fulbright fellowship for a year's study and research at the University of Oslo, Norway. Dr. Seaman will study under Dr. PAUL OWREN, professor of medicine on a project on blood coagulation, particularly the body mechanisms which initiate blood clotting.

Dr. Seaman will also attend the fifth international congress of the International Society of Hematology at the Sorbonne in Paris, September 6-12.

Dr. OSAMU MIURA, professor and head of the dermatology department at the Nithon University College of Medicine, Tokyo, visited the medical

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**In bacterial infections,** CHLOROMYCETIN is frequently effective against strains of gram-positive and gram-negative organisms resistant to other antibiotic agents. Notable clinical results have been observed in typhoid fever, bacterial pneumonia, and serious bacterial disorders.

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CHLOROMYCETIN is a potent therapeutic agent and, because certain blood dyscrasias have been associated with its administration, it should not be used indiscriminately or for minor infections. Furthermore, as with certain other drugs, adequate blood studies should be made when the patient requires prolonged or intermittent therapy.

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school recently. He discussed research work in pigmentation being conducted by Dr. THOMAS B. FITZPATRICK and Dr. AARON B. LERNER of the dermatology division.

### Pennsylvania

On July 1 the new institute of neurological sciences began operations. This institute was founded to provide a center for basic training in the various disciplines of neurological science. The institute will be administered by Dr. LOUIS B. FLEXNER, professor and chairman of the department of anatomy, who has been named director. He will have five assistants, and a consulting staff of 17 physicians who are members of the faculty of the medical school and college.

A number of fellowships, ranging from \$1,200 to \$1,800, are available for graduate students accepted by the institute.

### South Dakota

Dr. FRANCES O. KELSEY of the department of pharmacology has received a Lederle Medical Faculty award of \$22,500, covering a period of three years.

### Mississippi

Dr. RAY J. NICHOLS, director of admissions and secretary to the faculty of the school of medicine, died on May 12. A medical scholarship is being established as a memorial to him.

The work on the new medical center in Jackson is progressing and the school of medicine expects to occupy the building on April 1, 1955.

Dr. H. C. TRACY, associate in anatomy, will spend the summer at Woods Hole, Mass., doing research on the correlation of fetal movements with the development of certain elements of the nervous system.

### Southwestern, U. of Texas

The state legislature recently appropriated \$3,500,000 for construction

of an additional building to provide teaching and research facilities for the clinical departments. In addition, there will be some expansion of basic science department facilities and provision for animal hospital and general research facilities.

The basic science building, now nearly completed, will house the classrooms, student laboratories and research facilities of the basic science departments. Also nearing completion is the \$11 million Parkland Memorial Hospital, which will serve the city and county of Dallas.

### Stanford

A separately organized department of psychiatry has been formed at the school of medicine in San Francisco. Dr. GEORGE S. JOHNSON, professor of medicine, has been appointed head of the new department. The reorganization was necessary, according to Dr. Johnson, to meet increasing needs of patients and to provide for expansion and research in the field.

### Tennessee

A postgraduate program in emergency surgery and acute injuries will be offered by the college of medicine July 28-30, in cooperation with the John Gaston Hospital. The course will be under the direction of Dr. HARWELL WILSON, chief of the division of surgery, and will consist of ward rounds, demonstrations and lectures.

The \$1,373,354 chemistry-physiology building is scheduled to be completed by October 27. The building is the first of three to be completed under a \$5,000,000 expansion program. An administration-post-graduate building is under construction, and a medical-surgical building is also being built. In addition to the cost of construction, \$116,500 will be spent to equip the laboratories.

### U. of Texas, Galveston

Dr. G. W. N. EGgers, professor of orthopedic surgery, has recently returned from a six-week tour of medical installations and hospitals op-

erating in Japan and Korea.

Dr. ISAAC COSTERO, neuropathologist at the Cardiology Institute, Mexico City, was guest lecturer during May and June. Dr. Costero gave a series of seminars on the origin of function of fibroblasts. He also conducted special experimentation in the tissue culture laboratory under the direction of Dr. CHARLES M. POMERAT.

#### **Washington U.**

Dr. W. STANLEY HARTROFT has been appointed Edward Mallinckrodt professor and head of the department of pathology, effective September 1. He is presently professor of medical research at the University of Toronto.

Dr. Hartroft will succeed Dr. ROBERT A. MOORE, who resigned as dean of the school of medicine and head of the department of pathology to assume the position of vice chan-

cellor at the University of Pittsburgh. Dr. Hartroft's special fields of research are experimental sclerosis of the liver, hypertension and arteriosclerosis.

#### **Western Reserve**

A new scholarship program has been established at the school of medicine. The Emma and Frank Binz Memorial Scholarships will be made on a four-year basis, each individual scholarship being valued at \$5,500. This total represents \$3,200 for tuition, \$700 for a microscope and books and \$400 toward living expenses. Two Binz scholars will be appointed each year, beginning with the academic year 1955-56. Applications and information on the scholarships are available from the Committee on Admissions, School of Medicine, Western Reserve University, Cleveland 6, Ohio.

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# Audiovisual News

## Utah "Kine-Klinics" Available

The University of Utah division of postgraduate medical education, in cooperation with KDYL-TV and supported in part by the W. K. Kellogg Foundation, has completed the second series of four postgraduate television clinics. These "Kine-Klinics," televised over an open-channel network, have been kinescoped in the standard manner and are available to medical societies, medical schools and television stations for use in other areas. Because postgraduate television clinics are an experiment in medical education, it is hoped that other releases of these clinics will be carried on a schedule similar to that of the original telecasts. The Utah surveys indicate that the practicing physicians in the intermountain area felt that Tuesday morning, from 7 to 8, was the best hour for televised postgraduate medical education.

All costs of shipping and preparation of kinescopes will be borne by the Utah postgraduate division, which will also handle announcements, syllabus distribution and questionnaire circulation.

Those desiring the use of these kinescopes for trial use may write to Dr. Robert S. Warner, director, Division of Graduate and Postgraduate Medical Education, University of Utah College of Medicine, Salt Lake City.

## TV Film Directory

A directory of non-royalty films for television, listing nearly 3,000 films available to TV stations may be obtained at \$6 a copy from Iowa State College Press, Press Building, Ames, Iowa.

## "The Lymphatic System" Rated

This is the second in a series of reports on AV materials circulated on the preview circuits for medical colleges. The following information is taken from 130 appraisal forms returned by the time of writing by the 76 medical colleges on the circuits.

A total of 630 faculty viewers and 2,528 student viewers were reported on the appraisal forms as having seen the film, "The Lymphatic System" (see *The Journal of MEDICAL EDUCATION* review, October 1953). The film was given the following overall ratings: poor, 9; fair, 18; good, 64; excellent, 35; no indication, 4.

It was considered by the previewers for the following teaching areas, in order of frequency: anatomy, 49; physiology, 39; surgery, 9; others, 17.

The appraisers indicated that the film was best suited for the following audiences: medical students, 110; interns and residents, 28; postgraduates, 33; other, 35.

The appraisers were asked if this film should be a part of their college library. Forty-four said "yes," 43 said "no," while 43 said it was questionable. To the question: "Is this a film which you will want to rent from time to time?", 64 said "yes," 23 said "no," while 43 said it was questionable. It must be pointed out that many of the previewers who thought the film should be a part of their college library also indicated that they would want to rent the film from time to time, presumably because they would be unable to buy it.

The comments varied. There were those who criticized the slowness of pace and those who considered it a strength. Favorable comments include the following as representa-

tive: "Deliberately slow and emphatic, commendably so;" "Scientifically, didactically and photographically it represents one of the best we have ever seen;" "General opinion was that it was all-inclusive, original and refreshing. Presented a dynamic and functional approach, was an excellent review for second- and third-year students and fitted in as a superior integral teaching presentation for the first year students since it is hard to find lymphatics generally in the embalmed cadaver;" "Shown promptly to freshman anatomy group of 150 as review of lecture of week before." With respect to an omission in the film, one appraiser stated: "I liked the absence of music. I like my Bach and Brahms straight!"

Representative "weaknesses" of the film included: "Too much repetition of manipulative things which do not add to the knowledge of the audience, such as making incisions, inserting cannulae, etc.;" "This should be less detailed and more comprehensive;" "At least five terms are given a pronunciation not in common use in this country and are thereby distracting." There was a limited number of complaints about the lack of an overall summary.

**Distribution:** Imperial Chemical Industries Film Library, 521 Fifth Ave., New York 17, N. Y. **Rental:** \$8 for three days, \$16 for one week. Not available for sale.

#### Film Bans Barred

An international agreement sponsored by UNESCO eliminating tariff and trade restrictions on the circulation of educational films, filmstrips, sound recordings and other auditory and visual materials will come into operation within 60 days. The agreement grants exemption from all customs and quantitative restrictions, and from the necessity of applying for an export license.

To qualify for the benefits of the agreement, the materials covered must be certified by the producing country to be of an educational, scientific or cultural character. UNESCO is to publish catalogues of all certified materials.

#### A-V Coordinators Workshop

A workshop of midwest medical school audiovisual coordinators will be held on August 2 in Chicago. The conference will use facilities in the Conrad Hilton Hotel provided by the National Audio-Visual Association during its annual trade show and convention. Seven or eight national AV associations meet at this time. The trade show will have approximately 150 audiovisual displays.

A preliminary survey among the midwest coordinators reveals that they are most interested in the following topics:

1. What are the trends in "audio-visual" medical education?
2. By what means may the medical school teacher integrate the use of AV materials to increase his teaching effectiveness?
3. What should be the relationship between the AV coordinator and other staff members?
4. How should the medical school budget for the use of AV materials?
5. How is a central file of information best developed and adapted for the use of the AV coordinator and the school?

#### Summaries of Film Reviews

##### **Use of Whole Blood, Plasma and Concentrated Serum Albumin with Special Reference to Shock**

13 min., sd., color, 16 mm., 1952.

A long roll title discusses shock. Combat wounds of many kinds are indicated to provide many causes of shock. The circulation is shown in animation. A chart of blood fractions presents a range of selection for treatment of shock. The early signs of shock are indicated and the vicious cycle of shock development is symbolized by an animated diagram. The three shock treatment agents are shown: whole blood, plasma and serum albumin. Shock following burns, research on blood expanders and the conservation of whole blood are mentioned before a summary emphasizing the urgency of shock treatment.

There are now 5 'Spansule' preparations that have been perfected and clinically proved.

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and distributed only under the S.K.F. label*

## Dexedrine\* Sulfate Spansule<sup>†</sup>

10 mg.

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15 mg.

dextro-amphetamine sulfate, S.K.F.

for day-long control of appetite in weight reduction

New

## Dexamyl\* Spansule<sup>†</sup>

No. 1

&

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a balanced combination of dextro-amphetamine sulfate,  
S.K.F., and amobarbital

for continuous and sustained mood-ameliorating effect

*sustained release of medication over a prolonged period of time*

## Eskabarbit\* Spansule<sup>†</sup>

1 gr.

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1½ gr.

phenobarbital, S.K.F.

for continuous even sedation with phenobarbital  
throughout the day—or night

New

## Teldrin\* Spansule<sup>†</sup>

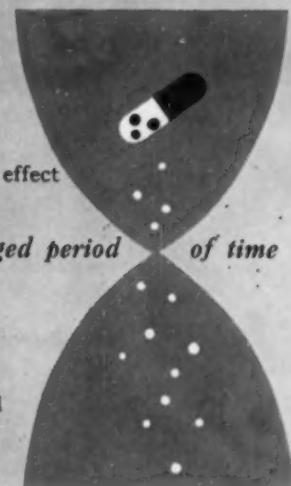
8 mg.

&

12 mg.

chlorprophénopyridamine maleate, S.K.F.

for continuous and sustained antihistamine effect



## Benzedrine\* Sulfate Spansule<sup>†</sup>

15 mg.

amphetamine sulfate, S.K.F.

for day-long relief of psychogenic tiredness



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Announcing the newest (5th) application  
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Both dosage strengths are designed to have the same duration of effect. The difference is in the intensity of effect. To determine optimal dosage for an individual, begin with one 'Dexamyl' Spansule (No. 2) capsule daily —taken on arising or at breakfast. Response to this dosage will be the best guide to subsequent administration.

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This illustrated lecture on shock and its management covers many points of an ever-changing controversial scientific development. The more modern concepts of shock etiology are avoided, but the vicious cycle pattern is helpfully sketched. The film's structure is entirely verbal; the cinematography and animation are ineffectual fragments designed to be foils for the sound track.

For the medical corpsmen for which the film was made, the film's deficiencies will perhaps be less obvious. However, for medical professional personnel the film's superficiality and poor story form will militate against any effective teaching use. This is a talk-talkie, with little to commend it.—D.S.R. and G.V.B., for MEND Program, February 1954.

**Audience:** Medical corpsmen.

**Production Data Sponsor:** Bureau of Medicine & Surgery, U. S. Navy Department; **Producer:** Film Graphics, Inc., New York, N. Y.

**Distribution:** Chief, AV Training Aids Section, Bureau of Medicine & Surgery, U. S. Navy Department, 23rd & E Sts. N. W., Washington, D. C.; **Loan:** (use Code No. MN-7335).

#### Infectious Hazards of Bacteriological Techniques

57 min., si., color, 16 mm., 1950.

The danger of infectious bacterial aerosols to laboratory personnel is stressed. The method of sieve type air sampling is demonstrated; *Serratia indica* is the test organism. The production of aerosols by various means of shaking, and their release by removal of stoppers or cotton plugs is tested for common laboratory containers. Accidental touching of containers by transfer loops; effects of pipetting including blowing out of last drop; the effect of culture medium bubbles following shaking; pouring cultures from container to container; syringe and needle transfers from rubber-stoppered vaccine bottles; the use of a blender for grinding up of infected tissues (liver) in broth—all are demonstrated with their plate culture results. Conclusion: bacteria-laden aerosols are produced during many accepted bacteriological techniques.

This long report film of important investigations into routes of air-borne laboratory infections is laboriously repetitive, as is necessary in partially documenting research for the critical examination of other scientists. However, its inadequate color quality, great length partly accounted for by titles and repetition of action and data make the film unsuited for all but graduate study. The

film is a provocative visual document of high research value. The high speed cinematography of aerosol development at the tip of a hypodermic needle is singularly illustrative. However, for student teaching the Public Health Service films on the same subject should be compared for relative efficiency of teaching time. D.S.R. and G.V.B., for MEND Program, February 1954.

**Audience:** Bacteriologists, pathologists, workers in public health.

**Reference:** Sulkin & Pike, *New Eng. J. Med.*, 241, 205-13, 1949.

**Production Data Producer-Author:** biological department, Chemical Corps, Camp Detrick, Md.

**Distribution:** Committee on Materials for Visual Instruction in Microbiology, Society of American Bacteriologists, Dr. Harry E. Morton, professor of bacteriology, University of Pennsylvania School of Medicine, 36th and Hamilton Walk, Philadelphia 4, Pa. **Service Charge** in addition to transportation charges.

#### Disaster Anesthesia (Open Drop Ether\*)

25 min., sd., color, 16 mm., 1953

An introduction by Dr. Andrew C. Ivy on the 330,000 nonfatally injured victims of a single hydrogen bomb precedes scenes of war casualties. Open drop ether for general anesthesia and novocaine for local anesthesia are advocated for disaster situations. The properties of ether are demonstrated. Coma, shock, blast, head and thoracic injuries are shown to be ether contraindications. In an improvised OR a patient with leg injury is prepared and examined preoperatively, preoperative medication is discussed and IV morphine is administered. Ether mask and drip cans are improvised; rubber tube airway and the simple instruments of open drop ether administration are displayed. The anesthetist induces anesthesia. The signs of the stages of anesthesia are demonstrated, emphasizing respiratory movements, use of the nasal tube in the third stage and constant check of total patient condition. In stage-four anesthesia, artificial respiration is employed. Emergence from anesthesia on the table precedes vigil in the ward until the patient is fully awake. A summary emphasizes supervision, patient evaluation, breath dosage of ether and proper aftercare.

This useful teaching film features the performance of a clearly competent anesthesiologist and a narration full of useful hints and excellent generalities. That the narration is lecturish and many of the scenes less than excellent in qual-

ity are minor considerations in the face of the overall practical values of the film's content. The author-narrator is good, the cinematography probably adequate for the film's function, although color might be greatly improved and direction could well have been more perceptive.

For its audience, all those who might in time of disaster be pressed into service as anesthetists (medical students, nurses, dentists), this film seen once, or more than once, with or without competent discussion guidance, will go far toward preparing such potential workers for tasks which we pray may never come. *D.S.R. and G.V.B., for MEND Program, February 1954.*

**Audience:** Medical students, dentists, nurses.

**Production Data:** **Sponsor:** E. R. Squibb & Co., New York, N. Y.; **Author and Narrator:** Max S. Sadove, M.D., department of surgery (anesthesiology), University of Illinois College of Medicine, Chicago, Ill.; **Anesthesiologist:** Lloyd Gittelson, M.D.; **Producer:** Scientific Film Company, Merrill J. Shepro, D.D.S., Berwyn, Ill.

**Distribution:** Film Library, E. R. Squibb & Company, 545 Fifth Ave., New York 22, N. Y., **Loan and Sale.**

\*Our addition.

#### Artificial Respiration

##### The Back Pressure Arm Lift Method.

20 min., sd., b&w., 16 mm., 1953.

After an introduction concerning the causes of respiratory arrest, an ostensible drowning victim is carried from the waves and the rescuer speedily positions the victim's body, places his own legs and hands and begins a rhythmic back pressure arm lift routine. The rationale of artificial respiration is shown in animation. For the operator vocal rhythm and leg-knee change are demonstrated. The chest pressure arm lift alternative method is shown. For arm injury cases the back pressure hip lift and the Schafer prone pressure methods are briefly performed. Changing operators, blanketing of the victim to stave off shock, management of the patient during recovery and removal to competent medical care are illustrated. A summary demonstrates all key points.

This excellent teaching film covers analytically and well the currently recommended methods of artificial respiration, and briefly presents the alternative procedures without raising confusing side issues. Production is professionally

skillful, visually and verbally informative, and any criticisms are very minor.

For all classes in first aid and artificial respiration this film is superior. Repeated showings even in the absence of trained instructors will be very productive. Superior training results are to be expected with all groups who employ this film. *D.S.R. and G.V.B., February 1954.*

**Audience:** First aid groups, medical students.

**Production Data:** **Sponsor:** Bureau of Medicine & Surgery, U. S. Navy for the Armed Forces; **Producer:** Audio Productions, Inc., 630 9th Ave., New York, N. Y.

**Distribution:** Chief, AV Training Aids Section, Bureau of Medicine & Surgery, U. S. Navy Department, 23rd & E Sts., N. W., Washington, D. C., **Loan.**

#### Diagnosis of Enterobiasis

38 frames, sl., b&w., 35 mm., F.S., 1950.

*Enterobius vermicularis* (pinworm) infections are shown to have a very high incidence. From the cecum and ascending colon the mature females migrate to the anus to deposit eggs on the perianal skin. Ineffective diagnostic procedures have been replaced by a modified Graham method (cellulose tape strip, slide and tongue blade) designed to pick up eggs from the perianal region for microscopic identification. Examination kits are available from state health departments.

This filmstrip covers the accepted modern diagnosis of pinworm infections, focussing upon the CDC modification of the Graham cellulose tape method for discovery of ova. One might question the relative incidence of enterobius and trichinella quoted as being based on different criteria of judgment. But fact and method are alike neatly assembled in a titled filmstrip which is simple and proficiently organized for teaching, and of handsome graphic rendering.

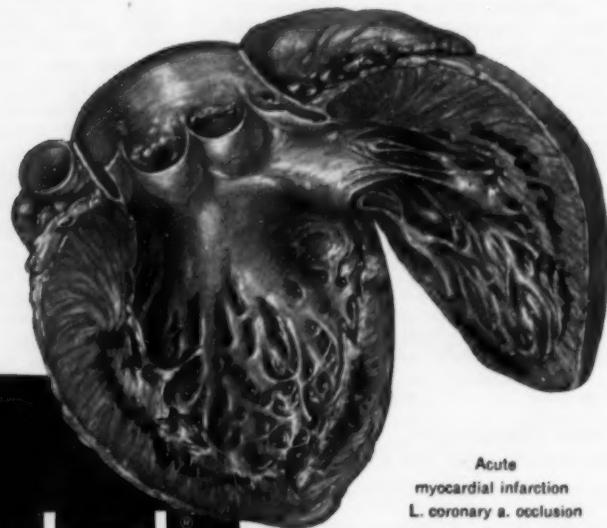
For all students of medical parasitology, pediatrics and medical technology this direct and simple message is effectively conveyed.—*D.S.R., February 1954.*

**Audience:** Students of medicine, medical technology, practitioners.

**Production Data:** **Sponsor-Producer:** Communicable Disease Center, Public Health Service, U.S. Department of Health, Education and Welfare.

**Distribution:** Communicable Disease Center, Public Health Service, Box 185, Chamblee, Georgia, **Loan;** United World Films, Inc., 1445 Park Ave., New York 29, N.Y., **Sale:** \$1.00 (Use Code No. 5-164)

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*secondary to myocardial infarction*



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1. Gazes, P. C., Goldberg, L. I., and Darby, T. D.: Circulation, 8: 883, Dec., 1953.  
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## Book Reviews

### **Criteria for Retirement**

**Geneva Mathisen**, editor. G. P. Putnam's Sons, New York, 1953. 222 pp. with appendix.

This small volume summarizes the discussions and includes some of the material prepared in advance for the first National Conference on Retirement of Older Workers, sponsored by the McGregor Fund and a committee of the National Welfare Assembly, and held for three days in January 1952. It was attended by about 80 people representing a very broad range of interests. The primary purpose was to categorize and clarify the problems which we must face in this field, and thus to stimulate experimentation and research.

Whatever the effect of the conference on those in attendance (and there is evidence that it was stimulating), this book seems unlikely to stir anyone to action. It is deadly serious, and makes the subject rather forbidding by emphasis on the unpleasant complexities of the situation, rather than the opportunities for intellectual exercise and constructive action and the richness of resources which our country offers.

Teachers in medical schools will find in it a good collection of facts and informed opinion to back up the general knowledge which most of them already have. Three monographs prepared for the conference by a University of Pittsburgh public health group, by Harland Fox of the University of Minnesota industrial relations center and by Sumner Slichter of Harvard, are of particular value.

Rodney R. Beard, Stanford

### **Medical Progress, 1954**

**Morris Fishbein**, editor. The Blakiston Company, New York, 1954. 331 pp. \$5.

This is a book which should have a legitimate appeal to busy practitioners and to physicians of any specialty who desire to be apprised quickly of the recent advances in medical science.

While sharply condensed in substance, the contents cover a wide range of material. Some chapters utilize disease subjects, others vary the form by utilization

of organs, anatomical regions and body tissues in their presentation. In a general way, each chapter deals with the latest physiological concepts of etiology, followed by recent diagnostic procedures and treatment.

The style of the editor is greatly in evidence, but enough of the individuality of the various authors is permitted to provide an interesting variety of rhythm to the reading of the book. Also the reference index at the close of each chapter provides easy access to further exploration of the subject if desired.

Those chapters on surgery, gastro-enterology and gynecology are particularly well presented. The short review of newer drugs with their action and uses enhances the interest for the reader. It is noteworthy to recognize the emphasis which certain diseases and treatments have made upon the minds of the various authors; for instance, retroental fibroplasia is discussed within the chapters on nutrition, endocrinology and ophthalmology and the cortico-steroids quite naturally, perhaps, enjoy the widest and most diversified field for consideration and use.

Evidently with the thought in mind of this book's ephemeral appeal, the publishers have not extended themselves to present an appearance of high quality in the production of this volume; nevertheless, "Medical Progress" represents one of the best compendiums of its kind thus far presented to the profession.

### **Practical Electrocardiography**

**Henry J. L. Marriott**. The Williams and Wilkins Company, 1954. 159 pp.

Generally speaking, this manual which is designed to approach electrocardiography from the point of view of the clinician, is well-organized and simply stated. Unfortunately, when an attempt is made to simplify electrocardiography, the reader is left with a host of electrocardiographic patterns for which there is not a given physiologic basis. This lack of fundamental concepts makes one rely upon given pat-

terns for diagnosis rather than emphasizing the fact that most electrocardiographic interpretation can be made if the fundamental underlying mechanisms are understood.

Other than this criticism, there are a few more points which should be made. Generally speaking, the reproduction of tracings is not as clear as the reviewer would like. Also, there is a variance in the size of the tracings, some being full size, while others are less than full size. Although this will not bother a reader who is experienced in electrocardiography, it is likely to be confusing to the beginner.

Early in the text, a method for determining heart rate is given which depends upon the fact that each beat be equally spaced. Such shortcut may lead to great inaccuracies. Occasionally, terms are used which are not explained until later; for example, in figure 18 on page 39, heart position is mentioned, whereas an explanation for this is not given until the unipolar leads are discussed in the last chapter. Frequently, examples are given in which the leads are not numbered. Although in many cases this is not absolutely essential, it would be nice to better orient the beginner as to the general contour of the tracing in each lead. The usefulness of mnemonics in such a field as electrocardiography is to be questioned. It would seem better to understand more fully the underlying reasons for the changes in the electrocardiogram, rather than using the mnemonic quoted on page 106, namely, "anterior before posterior, one before three." In the discussion on hypokalemia on page 146, it is mentioned that the T wave is broad and indeed in figure 107, one is asked to observe "the wide camel-hump T waves in leads V 2-4." Might this not better be expressed as an emphasized U wave as mentioned by Surawicz and Lepeschkin in the December 1953 issue of *Circulation*?

Despite the drawbacks mentioned above, this text should be useful to the student when teamed with a more basic discussion of electrocardiography and to the clinician who already has the knowledge of the fundamental physiology involved.

Robert G. Page, U. of Chicago

#### A Curriculum for Schools of Medical Technology, 3rd edition

Israel Davidsohn, M.D., editor, and Kurt Stern, M.D., associate editor. Recommended by the Board of Registry of the American Society of Clinical Pathologists, 1953.

This book is meant to be an outline for training of medical technologists and not a textbook. In the introduction the author defines medical technology and orients the medical technologists, not only in relation to the pathologist but also to the Registry of Medical Technologists. The latter encompasses the purposes of the registry, methods of administration, an outline of eligibility, certification and code of ethics of the medical technologist.

The actual curriculum is divided into sections, each with a recommended number of weeks and selected references to textbooks, monographs and periodicals. It includes urinalysis and clinical microscopy, five weeks; basal metabolism, two weeks; electrocardiography, two weeks; hematology, eight weeks; histologic techniques, four weeks; pretransfusion tests and blood bank procedures, four weeks; clinical chemistry, 13 weeks; bacteriology and parasitology, 12 weeks and serology, four weeks. The book ends with a chapter on examinations, another chapter on audiovisual teaching aids and an appendix containing an outline for student evaluation.

The book is clearly written, concise and certainly authoritative. It will be of inestimable value to the prospective technologist and to the instructor as well. It is a must in every laboratory that has anything to do with the training of technicians.

Peter A. Herbut, Jefferson

#### Cold Injury

Transactions of the Second Conference. Edited by M. Irene Ferrer. Josiah Macy Jr. Foundation, New York, 1954. 242 pp. \$4.

The conference on which this book is based brought together research workers and guests from departments of medicine, radiology, biophysics, internal medicine, physiology, pharmacology and surgery. The members of the conference were chosen because of their basic research interest in the physiological and pathological effects of cold. This book, along with an earlier one based on the first conference, summarizes recent research on the problem of cold.

The epidemiology of frostbite received the greatest attention in the second conference. Other topics discussed included the relation of ascorbic acid and cold, pathophysiology of cold injury and suggested areas for future research and conferences. All chapters are excellent in terms of providing research leads.

The book is interesting throughout. It presents not only the methods and techniques currently employed in research on cold, but gives the thinking of a group of ingenious workers. The reader "sits down" rather informally with the important workers in this area, and sees the significant problems that are involved virtually stripped of scientific jargon.

The multiprofessional conferences sponsored by the Josiah Macy Jr. Foundation are held for two purposes: (1) to stimulate research, and (2) to promote effective communication among various scientific disciplines. The conferences on cold attain both of these objectives and their summary is a particularly satisfying experience for the reader.

R.A.D.

#### **The Biochemistry of Clinical Medicine**

**William S. Hoffman, Ph.D., M.D.** The Year Book Publishers, Inc., Chicago, 1954. 643 pp. with index. \$12.

The author has aimed this book "at the level of the general practitioner with no more than the usual training in chemistry." The discussion of the various phases of biochemistry is rather elementary and frequently somewhat out of date.

This is particularly true of the sections on carbohydrate metabolism and serum proteins. The distribution of the latter is given in a table based upon Howe's method published in 1926. The purely clinical phases are covered more adequately with rather lengthy discussion on diseases of particular interest to the author such as diabetes mellitus, Bright's disease, hepatitis, cirrhosis and gout. The manner of presentation is, for the most part, lucid. Typographical errors are few in number and are not serious. This book will have more appeal to the man in general practice who has been out of school for a number of years than to the present student or recent graduate.

Walter C. Hess, Georgetown.

#### **A Manual of Tropical Medicine, 2nd edition**

**Thomas T. Mackie, M.D., Col. M.C., A.U.S. (retired); George W. Hunter III, Ph.D., Col. M.S.C., U.S.A., and C. Brooke Worth, M.D., W. B. Saunders Co., Philadelphia, 1954. 907 pp. with index. \$12.**

The first edition was published in 1945 when the authors were teaching tropical medicine at the Army Medical School. They listed six collaborators in that

edition. For this edition they have 24 collaborators, 180 more pages and 20 more illustrations. The book reveals that there has been a great increase in our knowledge of tropical diseases in the past decade. The new sections include: a new classification of virus diseases and several additions to this group—rickettsialpox, Ft. Bragg leptospirosis, nocardiosis, toxoplasmosis, kwashiorkor, tropical macrocytic anemia, epidemic hemorrhagic fever and medically important mollusks. As in the first edition, the problem of bibliographical references has been avoided by making no references to individual authors in the text and merely giving a list of source books under "acknowledgments."

Many of the sections have been partly rewritten to add new knowledge, and the chapter on the effects of heat has been entirely reorganized. However, one is struck with the fact that in many instances the military aspects of individual diseases as brought out in World War II are not mentioned. The excellent life cycle diagrams which emphasize epidemiology constitute important teaching material. The text is necessarily brief on epidemiology, clinical manifestations and prophylaxis, but in general gives the important facts. In the prevention of malaria the residual house sprays are described, but the results of this procedure on the incidence of malaria in many areas is not mentioned, nor is the virtual disappearance of indigenous malaria in the United States.

In therapy most of the latest approved agents are given and the chapter on drug therapy in helminthic infections is excellent. In the treatment of amoebiasis there is an error in the daily dosage of chiniofon (0.75 instead of 3.0 grams), and chloroquine, I think unwisely, is advocated for the treatment of acute amoebic dysentery.

The book is printed on heavy, glossy paper which allows ideal reproductions of photographs, including those of helminth eggs which replace the drawings of the first edition. The only editorial errors detected were in certain page references to treatment, probably due to the expanding of the text. Only one typographical error was found.

The authors, collaborators and publishers are to be congratulated on a fine product which will be of great value to medical students, practitioners and parasitologists.

Henry E. Meleney, Louisiana



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J. Cass, L. J. and Frederik, W. S.: Malt  
Soup Extract as a Bowel Content  
Modifier in Geriatric Constipation.  
Journal-Lancet, 73:414 (Oct.) 1953.

**Transactions of the American Ophthalmological Society.**

Columbia University Press, New York, 1954. 756 pp. with appendices. \$18.

A complete review of the 89th annual meeting of the American Ophthalmological Society at Hot Springs, Va. in May 1953, presided over by the president, Dr. Conrad Berens; consisting of all business transacted, awards, necrology, election of officers for 1954 and the presentation of the scientific program of 21 papers.

These papers uphold the traditions of the society to present the best and latest in ophthalmology by outstanding ophthalmologists and with the critical discussions by leading specialists in America and from foreign countries make this volume interesting and valuable.

Six candidates submitted their theses for membership in the society. These papers are well written and show intensive study and thought and range from "a mass report of ophthalmic survey in a southern state," to the highly technical role of "pseudo-exfoliation of the lens capsule in the production of glaucoma capsuloculare."

The highly prized Howe medal was awarded to Dr. Alan C. Woods of Baltimore, the director of the Wilmer Institute.

Dr. W. L. Benedict of Rochester, Minn., was elected president for 1954. The book will be a welcome addition to the ophthalmologist library.

W. Eugene Matthews, Georgia

**Books and Pamphlets Received**

(As space permits, those with the greatest interest to our readers will be reviewed)

**Clinical Psychiatry**

**Inn Skottowe, M.D.** McGraw-Hill Co., Inc., New York, 1954. 382 pp. with index. \$8.75.

**Pharmacologic Principles of Medical Practice**

**John C. Krantz Jr. and C. Jelleff Carr,** The Williams & Wilkins Co., Baltimore, 1954. 1150 pp. with index. \$12.

**Microbes and You**

**Stanley E. Wedberg, Ph.D.** The Macmillan Company, New York, 1954. 416 pp. with index. \$4.50.

**The Microtomist's Formulary and Guide**

**Peter Gray, Ph.D.** The Blakiston Company, Inc., New York, 1954. 680 pp. with index. \$10.50.

**The Macmillan Medical Dictionary**

**Sir Cecil Wakely, Bt., editor.** The Macmillan Company, New York, 1954. 471 pp. \$6.95.

# The Personnel Exchange

## Faculty Vacancies

• The Creighton University School of Medicine requires the services of a full-time teacher in the area of PREVENTIVE MEDICINE and PUBLIC HEALTH. Requirements: M.D. and a M.P.H., or equivalent. Write details to Dr. F. G. Gillick, dean, Creighton University School of Medicine, Omaha, Neb.

• PHARMACOLOGIST: Combined department of physiology and pharmacology has opening for assistant or associate professor to take charge of teaching program in pharmacology. Time and facilities for research available. Requirements: M.D. or Ph.D. degree with at least 3 years of postgraduate academic experience. Direct inquiries to Dr. J. Raymond Johnson, director, department of physiology and pharmacology, Creighton University School of Medicine, Omaha, Neb.

• PEDIATRICIAN: Desired for half-time position as instructor for clinical clerkship program. Will assist in obtaining private practice opportunity for half-time not devoted to teaching. Address: V-17.

• OPHTHALMOLOGIST: Residency available in ophthalmology at Vanderbilt University School of Medicine. For details address Dr. Henry Carroll Smith, 630 Doctors Building, Nashville 3, Tenn.

• OBSTETRICS—GYNECOLOGY: Professor and chairman of combined department, now under part-time professor, university desires to establish full-time department. Well-trained academically oriented man of approximately 40 years of age desired. Address: V-18.

• INTERNIST: Board certified or qualified desiring full-time academic career with excellent advancement opportunity. Should be interested primarily in clinical teaching and administration. Write Dr. Harold N. Neu, director of dept. of medicine, Creighton University, Omaha, Neb.

• FELLOWSHIP—CHILD PSYCHIATRY: Candidates must be M.D.'s with basic psychiatric or pediatric training. In addition to the clinical experience, the fellow in training will be encouraged to take certain academic courses which, if desired, can lead to acquisition of either a M.S. or Ph.D. degree. Write to Dr. Reynold A. Jensen, office of the medical director, University of Minnesota, University of Minnesota Hospitals, Minneapolis, Minn.

• CHILD PSYCHIATRIST: Joint appointment in department of pediatrics and psychiatry. Ample opportunities for research and teaching. Rank and salary depend upon qualifications. Staff and service of department will be expanded considerably in near future. Write to Dr. Reynold A. Jensen, office of the medical director, University of Minnesota, University of Minnesota Hospitals, Minneapolis, Minn.

• RESEARCH DIRECTOR: To develop an active research program for the Saratoga Spa at Saratoga Springs, N. Y. Ph.D. with experience in physiology. Knowledge of biochemistry also useful. Permanent New York State Civil Service position (G-27 with salary of \$6,562-7,992). Possible appointment to teaching staff of Albany Medical College. Write: Dr. Frank W. Reynolds, Medical Director.

• PHARMACOLOGY: The University of Alberta invites applications for the position of associate professor of pharmacology, in the department of physiology and pharmacology, effective September 1, 1954, at a salary within the range of \$5,250-6,250 per annum (not including cost-of-living bonus now approximately \$300), depending on qualifications. Duties include lecture and laboratory courses for medical and dental students and a program of research work. Applications should include a recent photograph or snapshot, a curriculum vitae, and three references. Address: Dean of Medicine, University of Alberta, Edmonton, Alberta, Can.

• BACTERIOLOGY: Applications are invited for position, department of bacteriology, Hebrew University-Hadassah Medical School, Jerusalem, Israel. Duties to commence October 1, 1954. Position vacancy in grade instructor, assistant or associate professor depending on qualifications. For further information write Dr. Joseph Hirsch, Executive Secretary, Medical Advisory Board, 9 East 89th St., New York 28, N. Y.

• OPHTHALMOLOGIST: Full-time teaching and research faculty appointment. Excellent research and clinical facilities. Rank and salary depend upon qualifications. Address: V-19.

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Information for these columns should reach the Journal office, 185 N. Wabash Ave., Chicago 1, not later than the 10th of the month preceding publication.

## Personnel Available

• SURGEON: M.D., L.R.C.S. Foreign-born; naturalized. Experience includes 2 years post-graduate work in surgery and 6 years approved residency. Desires teaching-research position in medical school. Available July 1954. Address: A-99.

• PHARMACOLOGIST: Ph.D., associate professor in large medical school, fully qualified for departmental administration, desires change to responsible position. 14 years medical teaching, including organization and presentation of all phases of pharmacology courses. Active in research and in direction of graduate activities. Member of pertinent societies. Available Sept. 1954. Address: A-100.

• BACTERIOLOGIST: Ph.D., desires teaching and/or research position. Experience in teaching, research and consulting. Successful preparation of nurses, pharmacists and pre-medical students. At present, assistant professor. Available on short notice. Address: A-101.

• INSTRUCTOR and/or RESEARCH ASSISTANT: M.D. Japanese; American born. Age, 40. Reads, writes and speaks English fluently. Experience: 1 year residency in otorhinolaryngology; and 3 years residency in surgery at the Kyoto Prefectural Hosp. 3 years as medical lab technician at the U. S. Army Hosp. in Kyoto, Japan. 4 years as chief of E.E.N.T. department, Kashida Hosp., Osaka, Japan. Engaged in private practice since 1952. Address: A-102.

• PHYSIOLOGIST: M.D., associate professor, man, age 35, married. Swiss. Research for 7 years in respiration and circulation in Switzerland, U. S., England and Germany. 7 years teaching experience. Background in math, physics and chemistry. Prefers position in research or teaching for about 3 years. Publications and references. Available in autumn 1954. Address: A-103.

• MICROBIOLOGIST: Desires graduate research fellowship or assistantship permitting study toward Ph.D. degree. A.B., M.S. in bacteriology plus 2 years of graduate study toward Ph.D. completed. Research experience in therapy of parasitic infections and bacterial physiology. Numerous publications and member of Sigma Xi. Presently assistant professor of microbiology in small college. Available in July 1954. Address: A-104.

• BIOCHEMIST-PHYSIOLOGIST: Ph.D., age 27, 3 years teaching experience, research on cellular and blood thymo-nucleic acids, relationship to stress and tumor activity. Interested in working toward M.D. degree. Address: A-105.

• ANATOMIST: Ph.D., 33 years old. Has taught in recognized medical school. At present executive position in pharmaceutical industry. Wishes to return to academic profession. Has taught all fields of anatomy; interested in research. References; publications. Address: A-106.

• PHARMACOLOGIST: Male, age 33. Ph.D. Minors: biochemistry and physiology. 1 year graduate teaching and research assistant. Teaching and research position with medical, dental or pharmacy school pharmacology department desired. Available immediately. Address: A-107.

• PHARMACOLOGIST: M.D., Ph.D., married. 8 years teaching experience, active in research; publications. Desires position teaching with research or research only. Address: A-108.

• INTERNIST: Man. Age 42. M.D., Ph.D., F.A.C.P. More than 18 years experience in teaching, research and top-level administrative responsibility. Would like permanent position involving some teaching and/or clinical investigation. Address: A-109.

• PATHOLOGIST: M.D., 43, board certified in pathologic anatomy and clinical pathology. 17 years well-rounded experience in large hospital laboratory, medical school teaching and residency programs. Many scientific publications. Special interests include tropical medicine and hematology. Seeks position in foreign country, preferably in tropics. Address: A-121.

• ANATOMIST: Ph.D. in medical science, major in anatomy, 1954. Married. Age 31. Would like permanent teaching-research position at medical school or research institute. Extensive background in preclinical courses including pathology. 4 years teaching experience as fellow in histology and embryology in medical school. Keen interest in histochemistry and endocrinology. References. Available June 1, 1954. Address: A-110.

• SURGEON: 38, married, veteran. Diplomate of the American Board of Surgery. Training in general surgery with fellowship in tumor surgery. Background of research in biochemistry. Desires teaching position with opportunity for research; U. S. or foreign. Available July 1. Address: A-111.

• ORTHOPEDIC SURGEON: 36; certified; university trained; M.S. (orthopedic surgery) experience in traumatic surgery and rehabilitation of severely disabled. Seeks association with diplomate and university hospital affiliation. Address: A-112.

• PHYSIOLOGIST—MICROBIOLOGIST: Man, Ph.D., 30, veteran. 7 years experience in teaching physiology, microbiology and histology, medical school level. Member of scientific societies. Desires teaching fellowship with opportunity to work for M.D. in return for tuition and stipend. Prefer Canada or U. S. Goal—radiology. Available in fall. Address: A-113.

• PHARMACOLOGIST-PHYSIOLOGIST: M.S., Zoology; Ph.D. expected June 1954. Experienced in pharmaceutical research, teaching experience in pharmacy during army service. Desires research and teaching position in physiology and pharmacology. Special interest in endocrinology. Member scientific societies. Sigma Xi. Publications; references. Address: A-114.

• M.D., M.P.H.: Diplomate of Board of Public Health and Preventive Medicine desires to head department of PUBLIC HEALTH and PREVENTIVE MEDICINE in medical school. 14 years varied experience in field combined with teaching at undergraduate and graduate levels. Capable of integrating this subject with rest of medical school curriculum. Address: A-115.

• INTERNIST-CARDIOLOGIST: M.D., 25, family. 7 years of university hospital training, including 4 years in cardiac laboratory. 30 publications. Certified in subspecialty. Now assistant professor of medicine. Seeking change of location. Prefers full-time permanent academic position. Address: A-116.

• ANATOMIST: 28, Ph.D. in anatomy. Desires teaching position at medical, dental or pharmacy school. Will consider teaching gross anatomy, histology, embryology or neuroanatomy. Chief interest is neuroanatomy. Continental U. S. school only. Available now. Address: A-122.

• PHYSIOLOGIST-ENDOCRINOLOGISTS Man, 31, Ph.D. 5 years experience in teaching and research at Harvard University. Seeking full-time academic position. Extensive experience in physiology, general endocrinology, endocrinology of reproduction, human heredity, research methodology, histology and zoological sciences. Will accept administrative duties and responsibilities. Salary secondary to good future. Address: A-117.

• HISTOLOGIST-HISTOCHEMIST: Ph.D. Harvard; young man, teaching and research experience. Publications; member of scientific organizations. Interested in obtaining teaching or research position in eastern U. S. Address: A-118.

• LABORATORY SUPERVISOR: Administrative and/or teaching position in medical technology. 10 years supervisory experience. B.S. in bacteriology. Graduate credits in biochemistry, histology and pathology. Laboratory officer, Sanitary Corps, Medical Department, U. S. Army 4 years (captain). Publications; references. Seeks stimulating position, preferably with academic affiliation. Address: A-119.

• SURGEON: 32; American Board of Surgery certified. Married. Interested in academic career; category 4; prefer job with limited

private practice privileges, but will consider any full-time position without private practice allowances. Address: A-120.

• BACTERIOLOGIST: Male, 39, M.Sc., married. 5 years teaching experience in medical bacteriology and general microbiology. 12 years practical and administrative experience in public health laboratories. Desires teaching position with research opportunities or administrative position in public health laboratory. Presently assistant professor of bacteriology. Available autumn 1954. Address: A-123.

• BIOCHEMIST-RADIOCHEMIST: Ph.D., 1952. Major in physical chemistry, minor in biochemistry. Experience in sterols, organic reaction mechanisms, small animal metabolism and radiocarbon dating. Presently engaged in research on mineral metabolism in man. Publications. Desires teaching or research position in applications of isotopes or physical chemistry to medical problems. Address: A-124.

• INTERNIST: M.D., practicing physician, consultant in medicine and endocrinology. Interested in university position developing research study to determine the potential of measuring taste as it adapts to and reflects immediate physiologic and nutritional needs. Hospital and medical school teaching experience. Certified Am. Bd. of Internal Medicine; Am. Coll. Physicians. Address: A-125.

• BIOCHEMIST: Biochemistry-Internal medicine Ph.D., M.D., 40. Interested in medical school appointment for teaching and research. Experience in teaching, research and private practice. Particularly interested in clinical correlation of basic sciences. Address: A-126.

• PHYSIOLOGIST: Ph.D., male, 37, family. Experience in research and teaching mammalian physiology. Research emphasis in neurophysiology and visual physiology. Experienced in using electrophysiological techniques. Acquainted with problems and techniques of electromyography, especially as applied to human studies. Publications. References. Desires opportunity for research with or without teaching responsibilities. Available. Address: A-127.

• PHYSIOLOGIST: M.S., Ph. D. nearly completed, age 26, family. Interested especially in cellular physiology dealing with inorganic ions and their transfer across cellular membranes, and dealing with ultrastructure; problems relating to cell division and problems in neurophysiology. Address Hermann Rudenburg, 5479 Ellis Ave., Chicago 15.

• PHYSIOLOGIST: Ph.D., 35, married. Presently associate professor of medical physiology in large medical school. Fifteen years experience in teaching and research, the last seven in medical schools. Many publications in fields of nutrition, respiration, endocrinology, sterols, radioisotopes. Experienced in organization, administration, teaching. Considerable clinical experience. Will consider any location. Salary above \$7000. Address: A-129.

• PHYSIOLOGIST: M.D., Ph.D., 36, family. Training requirements for boards in internal medicine completed. Teaching and research experience. Army service will be terminated end of 1954. Desires full-time academic position where basic science and clinical interests in teaching and research may be fulfilled. Address: A-128.

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